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# Journal of Electricity and Western Industry

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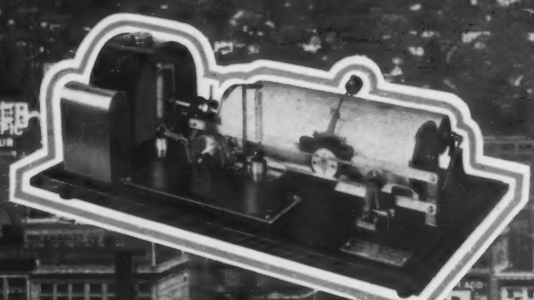

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**Journal of Electricity and Western Industry**

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.



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# AT THE SOURCE OF WEALTH IN THE NORTHWEST

From the variety of its charms of flower, pine and glacier to the potentialities of development which are represented in the natural reservoirs of its snows, Mt. Rainier is typical of that land of boundless resource which is the Northwest. From its summit can be viewed the greatest body of standing timber remaining in the United States today. Close about its feet is the Puget Sound region of growing industry and expanding commerce. To the east beyond the succeeding ranges of the Cascades lies the great Columbia basin project, which with the area of the Colorado, offers the greatest undeveloped agricultural opportunity of the country today, awaiting only the application of water. And upon this summit and within sight of its peak, is the fuel and foundation and the motive power for all this development—the great water power resources which are the primary wealth of the Northwest, a wealth it possesses in greater abundance than any other section of the nation.

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# Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, EDITOR

Associate Editors

Norman S. Gallison  Clotilde Grunsky  George C. Tenney

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## Functions of a Business Paper in the Service of Industry

FROM a year of service as special adviser with the Department of Commerce, F. M. Feiker, vice-president of the McGraw-Hill Company, returns with a broad vision of the needs of business and the part which the business press may play in the service of industry. He points out the factors which affect the present economic position of the country and the absence of a clear-cut program on the part of business for their solution.

With the American belief in a continuously increasing standard of living combined with the necessity for competing abroad upon a low cost basis, the broad problem of the elimination of waste becomes one of the fundamental answers to our economic situation, as is also the problem of distribution, without a solution for which, any question of increased production is not more than academic.

The forces which are at work attempting to bring order out of chaos are placed by Mr. Feiker in the following order as educational agencies:

1. Business and engineering press
2. Associations and societies
3. General press
4. Government literature
5. Educational institutions.

The part of the business press lies in two directions—first, in finding out and reporting what these various educational forces are doing toward the solution of economic problems and, second, in taking to them broad ideas and plans which come out of the close association of the publishers with industry and in which the business press takes the initiative to get something started. No other agency has so well organized a medium of expression, nor so select an audience as the technical press for spreading education in the industrial field.

From the standpoint of this opportunity so clearly pointed out by Mr. Feiker, the Journal of Electricity and Western Industry stands in the favored position for the service of our western industry. In advertising columns and editorial pages alike, it is our province to bring the report of the best which technical research or government leadership may develop toward the solution of these fundamental problems in their western aspects. And from the intimate contact which this paper maintains with western development, we can further take the lead in spreading new movements which thus brought to the attention of other mediums for research and application, may help in the formulation of progressive business policies for the West and for the nation.

It is our desire, as expressed by Mr. Feiker, to "become recognized as having a part in getting some of these great purposes accomplished."

### Lower Freight Rates in the Green Fruit Industry

THERE is a vital point at issue for the thoughtful consideration of all well wishers of the West in the present agitation of the Green Fruit Producers to lower freight rates to eastern distributing centers.

The Journal of Electricity and Western Industry holds no brief for the railroads in this fight, nor does it throw its weight unreasonably with the producers. The facts simply stated are these: When a western industry finds rates have been advanced to such an extent that it ceases to be able to function profitably in getting its product to eastern market centers, then these specific rates should be lowered unless the rate base as a whole is thereby affected to such an extent that the carriers cannot maintain service with profit. Thus it is seen that the West is directly affected in this investigation from two distinct angles—first, the life of one of its productive industries is at stake, secondly, the upholding of the transportation structure, the very artery for all industrial life in the West, is involved.

The specific points at issue in this move of the Green Fruit Producers are set forth in considerable detail on another page of this issue by one who for years was associated with the traffic department of one of California's well known traction companies.

Generally speaking, the public is not by any means convinced that the Green Fruit Producers have been hard hit by increased rates. There are too many well authenticated cases of fabulous returns that have accrued to western shippers in the green fruit industry during recent years for anyone to believe at first glance that this flourishing industry is seriously undermined. On the other hand the railroads as a whole are known to be far from being

out of the woods in the matter of sufficient earning capacity to keep rolling stock and road bed in the highest state of efficiency for western needs.

Our railroads must be able to pay a reasonable return on their investment. Unless this is assured investors, little hope can be held out that the vast sums of money will be available to carry out the much needed extensions and improvements that the West must have, to meet its present unprecedented growth. This rate investigation involves a gigantic revenue to the railroads and as a consequence is one of unusual interest to the West. Readers of the Journal of Electricity and Western Industry will be kept informed to the fullest degree as this investigation progresses, for there is much more at stake for western industry as a whole than would seem apparent at first analysis.

---

### The Tide of Bus Transportation

IF, at the moment when the first automobile was frightening horses and country visitors upon the city streets, the League for the Protection and Perpetuation of Hansom Cab Drivers had visualized its impending doom with sufficient vividness to have held an indignation meeting of its members, their attitude would have been recognized as both natural and justified—but would not have done much good. The present era of resolutions against auto stages and auto truck transportation on the part of railroads and street railways contains some element of this futility of a protest against progress. The service of this new form of transportation in building up isolated communities and in stimulating traffic has shown that it is here to stay. Insofar as there is still a lingering hope with railway men that such transportation may be abolished and the good old times before this disastrous competition may return, that hope is doomed to disappointment.

This is, however, by no means the entire story. Bus transportation may indeed be here to stay, but it should be required to win its laurels without special subsidy or privilege. The railways are thoroughly justified in their complaint that the competition from which they suffer does not compete with them on equal terms. They must provide the capital and pay taxes to the government upon a tremendous investment in track, the upkeep of which is one of their major running expenses. At the same time, the state is providing highways free of charge for the use of commercial automobile service, and keeping them up to good condition at its own expense.

There are two things which would help to remedy the situation. In the first place, taxes and license fees upon bus systems should not be based upon the compartively negligible investment but upon the amount of business conducted, which would be in direct proportion to the extent to which the highway is used—and this sum should be sufficient to cover a just proportion of highway expense. In the second place, the final limit of load which will be allowed upon the highways should be fixed now for a definite period ahead, or until the character of the highway shall be changed from its present standard—and, what is not done under the present inadequate provision, this measure should be enforced.

Two provisions of this nature would do much toward placing bus transportation upon a fair basis. We want the benefit of its contribution and it should not arbitrarily be ruled out—but it should be made to pay its way as it goes along.

---

### Impartial Research in Home Appliances

WOMAN'S interest in electricity will always center in the use of electric labor saving devices in the home. If the "electrical story" is to be told the feminine part of the population, therefore, it must be linked definitely to this field. Obviously it will be a story of economy and efficiency, of the service back of the light and power which is available for home use, the reason for rates and the costs of operation.

As a preliminary step to any such campaign, an impartial investigation is needed of the economy and efficiency of electrical labor saving devices. There have been many such investigations made by manufacturers or groups of electrical men which have had their very great value and which form the basis for practically all the advertising and the educational matter now directed toward women—but for purposes of argument, there is nothing which carries weight like the unprejudiced experimentation of a government research bureau or the verdict of the scientific department of a university. Such a comprehensive investigation can be started any time the electrical industry is prepared to furnish the equipment and funds for a fellowship for such an investigation, either with the government or with a university of standing.

Our western educational institutions have at all times stood ready to cooperate with industry to the fullest extent. Such a fellowship would bring a full return, not only in the young women it would train for later association with the industry, but in the impartial testimony it would provide for ammunition in any educational campaign which is to have the forwarding of the home use of electricity as its object.

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### Advertising Western Progress

CHAMBER of Commerce advertising has done much to bring before the rest of the nation the opportunity of this western empire and to make known the names of the growing cities of this coast, alike to visitors who seek beauty and climate and to manufacturing enterprise seeking a western home. It is doubtful, however, how much harm is mixed with the good which Chambers of Commerce accomplish. Within the past few weeks, we have had the spectacle of Los Angeles claiming to be the foremost manufacturing city on the coast, on the ground of the number of employes engaged in this activity, while San Francisco publicly announces their mis-

take and points to the greater output of products manufactured from the northern California city. Oakland, California, enthuisasts on the other hand, are authors of a pamphlet featuring Oakland as the city of most rapid manufacturing growth on the Pacific Coast, to which Portland has replied with census figures showing their own precedence in this field. Everyone is familiar with the type of literature to which certain chambers of commerce are addicted, which consists of a map showing the number of steamship lines or railway systems serving their city, with only a few scattering lines calling at other rival ports. Occasionally the rival port takes the trouble to refute the inaccuracies of such a map —more often it is ignored.

Of what good can literature of this sort be to the Pacific Coast? No one is deceived by it—or if they are momentarily, they are speedily undeceived by the injured rival community with consequent injury to all concerned. There is plenty to be said in behalf of the West which is strictly true and which will have weight as business argument. There is painful need for business statistics in regard to almost all of these western communities. There is, in short, a very legitimate field for Chamber of Commerce activity, which few western chambers have yet had the enterprise to fill. A little more energy devoted to business research and study and to the providing of figures and photographs of interest to those seeking information will result in more favorable publicity to the West than many boasting pamphlets whose figures cannot be substantiated. As the Journal of Electricity and Western Industry has had occasion to say before, it is time the West outgrew the age of small town rivalries.

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### An Eastern Farm Situation

OUTSIDE of a few large cities in the Northeast, no telephone development is being made, while many farmers are still without any kind of service, according to Wm. J. Thompson, addressing a body of Maine farmers. At the same time, most small villages and farms are still without electric lights and while it is not profitable to extend the lines far into the country, there are many sections that might be developed if we had the old-time enthusiasm for such work. The reasons for this, he points out, are many, the major one being that "for the past twenty years the widespread wholesale muckraking criticism of all public utilities has bred a feeling of distrust on the part of the public. If we do not want these utilities," he concluded, "we could not do more to get rid of them than we are doing now."

These conditions are far from typical of the West, where the power companies have shown a most progressive attitude in carrying on the necessary pioneer work for the development of farm districts. In consequence western farms today use more electricity than those of all the rest of the nation put together.

There is, however, some present danger of the western farmer falling into the same trouble as his eastern brother. Stimulated by those who feel that all the ills of the universe might be cured through government ownership of public utilities, there is an inclination toward questioning the decisions of the utility commissions and of criticising generally the morals and intentions of the power companies. It is believed that this is merely a temporary phase and one which will yield to a saner viewpoint following the fall elections, but for purposes of comparison, the above statement of eastern conditions is offered as presenting the other possible extreme of the picture.

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### Club Spirit During the Past Year

AMONG the achievements in which the electrical industry may take just pride is the progress made during 1921 in the growth, size, and usefulness of the many club organizations composed solely of the men in the electrical field. It is well that the public should hear more about the activities of the great industries in the West. Especially is this true of the electrical business because of the opportunity and necessity for correctly informing the people at large of the benefits incident to the latest developments in the electrical arts.

Few electric clubs were carrying on in the West prior to 1921. The memberships were limited and the activity necessarily restricted. This is rapidly changing and the vision of usefulness is broadening constantly.

Whether the clubs are composed of individuals associated with a single company or made up of men from all branches of the industry, there will be much good resulting from this association just so long as the motive is to render a better, more efficient service in return for moderate compensation. A good example of the growth within a single industrial concern is that of the Southern California Edison Company which began in 1921 with but one Edison club and within twelve months grew to 28 clubs actively participating in the affairs of greatest interest to them in their respective communities. The Los Angeles Electric Club with its membership close to 700 and the San Diego Electric Club with 100 per cent of the local industry active, are among the Electric Clubs which in every city of the West have been showing the latent force of the cooperative spirit. The San Francisco club was the recent winner of an intercommunity attendance contest, the Oakland club is growing into the banner organization, and the recently organized club of Seattle is showing the west-wide spread of this interest in inter-industry service.

In no other part of the nation does electricity play such an important part in economic and social life as in the West, and with the development of a great interconnected system of power lines and an increased domestic and industrial use of electricity it is not unlikely that there will develop a great association of Electric Clubs in western cities fostering the electrical idea.

# Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

## San Francisco Manufacturing Survey

**Seventy Per Cent of Local Industries Operate on Open Shop Plan, According to Recent Chamber of Commerce Investigation**

RESULTS of the recent survey just completed by the San Francisco Chamber of Commerce with the assistance of students from the University of California, indicate that the total manufacturing output of San Francisco industries for 1920 is in the neighborhood of $600,000,000. This covers eight of the largest groups of manufacturers in the city, including 380 firms in the metal group, 302 in the manufacture of food, 227 in paper and allied products, 205 in textiles, 187 in wood, 135 in miscellaneous, 102 in chemical and 57 in leather. Results of the survey may be tabulated as follows:

| | Number of Plants | Value of Output | Number of Employes | Payroll |
|---|---|---|---|---|
| Food | 302 | $175,402,301 | 10,991 | $13,445,700 |
| Metal | 380 | 137,281,180 | 21,816 | 28,349,763 |
| Textile | 205 | 48,267,478 | 7,045 | 7,244,509 |
| Chemical | 102 | 32,838,850 | 1,525 | 2,366,576 |
| Paper | 227 | 29,089,962 | 5,199 | 8,242,476 |
| Wood | 187 | 20,919,600 | 3,667 | 5,114,800 |
| Leather | 57 | 9,903,025 | 1,580 | 1,802,452 |
| Miscel. | 135 | 39,403,001 | 5,000 | 6,237,435 |
| Total, | 1,635 | $493,105,397 | 56,823 | $72,803,711 |

The average output per factory was $301,593, the average per capita payroll of persons engaged in manufacturing was $1,281. The average number of employes per factory totaled 34. This is a somewhat higher average than that given by the census, owing to the fact that fewer small establishments were included.

Of the total number of persons engaged in manufacturing in San Francisco, 48,862 or 77.2 per cent, were employed in open shops. This does not mean that all of these persons were not members of unions, but does indicate the rapid spread of the open shop policy. Those engaged in factories managed on a closed shop basis totaled 4,992 or 8.7 per cent. The number of those employed in shops whose policy was not stated was 8,039.

Of the total 1,635 concerns studied, there are 1,065 or 65 per cent, operating as open shop establishments, 206 as closed shops and 365 shops which failed to specify their policy.

The survey showed that 989,176 barrels of fuel oil were consumed in these manufacturing industries, a total of $352,955 was expended for gas and $1,018,507 for electricity.

## Rate Reduction Asked by Utah Farmers

**Appeal Before Utah Commission Asks Reduction of Power Rates as an Emergency Measure Affecting 1921 and 1922 Rates**

THE question as to whether power rates may be modified by conditions which affect the profits or lack of profits of the consumer is involved in the power case now before the public utilities commission of Utah. The farmers of that state using electric power for irrigation apparently do not question the justice of the present schedule but make the appeal that the rules and regulations governing the operation of pumping plants be changed so that provision might be made for tapering off on power consumed both at the beginning and end of the irrigation season. They declare that an emergency exists in the industry, in view of which they ask that for the present year and for 1921, the power schedule in effect before the decision of the commission last March should be placed in effect. This would result in a payment of over $25,000,000 less to the power company than is provided under the rates allowed by the utilities commission.

There are several interesting features of the case, notably that of an appeal by the farmers from rates for which they have already been legally billed under a commission ruling and also the question as to whether rates shall be determined by the ability of the consumer to pay.

The power company does not allow the legality of either of these proceedings but has expressed itself as willing to abide by whatever decision is reached by the commission in this case.

## Western Factory for General Electric

**Later Construction of Western Factory Branch Seen in Purchase by General Electric Company of 24-Acre Site in Oakland**

ANOTHER western factory branch in the electrical field is seen in the announcement by the General Electric Company of the purchase of approximately 24 acres of land in East Oakland, with the intention of improving this property in line with the extension of manufacturing activities in Oakland.

For some ten years the company has manufactured Mazda lamps in its Oakland factory. It announces at the present time that it has confidence in the future of the Pacific Coast and that looking toward this future growth, plans are being made ultimately to manufacture certain of its products in a factory to be built at the new location.

This announcement is in line with the recent purchase of the former Kilbourne and Clark plant in Seattle by the Westinghouse Electric and Manufacturing Company and the opening last year of a warehouse and assembling plant for telephone equipment by the Western Electric Company at Emeryville, California. The movement is a significant one for western industry.

## City of Tacoma Offered Cheap Power

### Puget Sound Power Company Offers Surplus Power for City Use at Ten Per Cent Below Cost of Lake Cushman Development

POWER will be furnished to the City of Tacoma at ten per cent below the cost of producing it at the Lake Cushman site, if the offer of Puget Sound Light and Power Company now before the city officials is accepted. The proposition is that an impartial board of engineers be appointed to determine what the cost of power development would be should the city go forward with its project. The power company then agrees to sell power to the city at a rate ten per cent less than this cost.

According to R. T. Sullivan, manager of the Stone and Webster companies, the interest of the power company in this matter is in seeing Tacoma grow under the stimulus of cheap power, so that the street railway lines, also owned by the Stone and Webster interests, will have a better chance for success. He points out that the street railway has 60 miles of lines for a population of 100,000, or about twice the normal investment for the size of the community.

The power company is able to make this offer, according to Mr. Sullivan, because of their own advantageous developments and also because of their interconnections with plants in Spokane, British Columbia and Oregon. The offer was made in the conditional fashion rather than as a flat rate in order to make the company's position entirely clear and to forestall any controversy as to the relative advantages to the city of the two propositions.

Among the elements of the situation now being considered by the city is the question whether, if this offer is accepted, they will not lose their right to later development of the Lake Cushman site. A decision is expected soon.

## Water Power Filings on Utah Rivers

### Utah Power and Light Company Proposes Million Horsepower Development on Green River in Power Commission Filing

EXTENSIVE contemplated power development in Utah is revealed by the publication of water filings by the Utah Power and Light Company on the Green River, between the Flaming Gorge in the northeast corner of the state of Utah and Rattlesnake Creek. The company has also filed an application for a preliminary permit to develop all the power in Yampa River in northwestern Colorado. The proposed developments in Green River consist of six dams, as follows:

| | | |
|---|---|---|
| Swallow Canyon | 110 | feet high |
| Echo Park | 310 | " " |
| Island Park | 100 | " " |
| Split Mountain | 170 | " " |
| Minnie Maud | 190 | " " |
| Rock Creek | 175 | " " |

Four dams are proposed on the Yampa River, as follows:

| | | |
|---|---|---|
| Juniper Mountain | 200 | feet high |
| Maybell | 120 | " " |
| Lily Park | 250 | " " |
| Blue Mountain | 210 | " " |

A power house will be located at each of the dams.

These projects, together with the Flaming Gorge and Rattlesnake Creek projects of this company, will have an estimated installed capacity of approximately 1,000,000 horsepower.

This announcement follows closely upon the publication of construction programs of several of the California and Northwestern companies and indicates that there is no lessening of the power program as outlined by western companies last year, but that the estimates of future developments there made will in all probability be exceeded.

## Electric Projects Planned for Orient

### Electric Factories and Power Plants Reported From Japan, China and Australia—German Competition Active in Soochan

GREAT activity in the electrical field is reported from the Orient by the representatives of the Department of Commerce, with numerous opportunities for sale of equipment, as well as possibilities for the investment of American capital. Among the projects contemplated are the following:

**Australian Railway Purchases for Power Signaling**

Tenders will be received by the Victorian Railway Commission on March 8, 1922, for 35 cabin transformers for power signaling. No specifications, conditions, or tender forms have been received. Firms having local representation in Australia should take this matter up direct through such agencies.

**Tokyo-Nikko Electric Railway**

A company at Utsunomiya, Japan, is making arrangements to construct a high-speed electric railway between Tokyo and Nikko, at an estimated cost of 10,000,000 yen. Construction work is expected to be completed by next summer. The distance between Tokyo and Nikko will be covered in an hour and a quarter.

**Electric Meter Factory in Japan**

Siemens, Schuckert & Co. and the Furukawa Electro-Industrial Co. have decided to erect a factory for the purpose of constructing meters capable of measuring weak electric currents. No such meters are made in Japan at the present time.

The Kyoto municipality is planning a large electric power station (steam) at an estimated cost of 4,300,000 yen, to be completed within three years. The total area covered by the station will be 3,000 tsubo of which 500 tsubo will be occupied by buildings of reinforced concrete and brick. Two generators, each 5,000-kilowatt capacity, will be installed.

**Electric Lighting Plant, Kashing, China**

It is reported that an electric light plant is to be constructed at Pu-yuan-ching, Kashing, Chekiang Province, China, by the manager of the Kashing Telephone Co. Registration of the company has been made with authorities.

**Electric Light Plants in Manchuria**

The terms offered by German manufacturers of electrical goods are becoming a strong factor in the China market. This is particularly true in the line of industrial machinery and plant equipment. Very recently, according to Commercial Attache Julean Arnold, at Peking, the German Siemens, Schuckert Electrical Co. formed an alliance with Chinese interests for the development of a large electrical manufacturing plant at Soochan. The investment of American capital and cooperation with Chinese financial interests are important means for taking fullest advantage of opportunities offered by the Chinese market.

# Letters to the Editor

## Advocates Promotion of Fire Alarm and Signal Systems by Contractor-Dealers

To the Editor:

Sir: I have read with a great deal of interest the article appearing in the October 1st issue of the "Journal" by Mr. E. R. Murray, entitled "Alarm Systems Offer Opportunity for New Wiring Business." I cannot add to anything that Mr. Murray has said, but I am taking the liberty of making a few comments, which I trust will be of interest.

The field of signalling and communication, other than the regular telephones for cities and industrial plants, is one that on the Pacific Coast has been barely scratched, but is one that with intensive cultivation will yield rich and continuing returns. It is a field that belongs properly to the electrical contractor-dealer, that is to say, a field that should be explored and developed by him and not by manufacturers or jobbers, although these latter parties are at all times willing and anxious to cooperate and furnish special information.

The electrical contractor-dealer, in the past, has been thought of as being familiar only with power and light wiring and installation, household appliances, and the simpler forms of push button signals. The installation of an interior telephone system, or of a fire alarm, or police patrol system was considered as requiring, if not the services, at least the supervision of a specialist. This does not apply to all electrical contractor-dealers, but it will find application among quite a number.

The theory of signalling systems is simple, and no different from that of other electrical circuits; the wiring diagrams can be easily interpreted by anyone familiar with reading blueprints; the apparatus has been developed to a point where its installation will present no special difficulties.

In the smaller cities not having paid fire-fighting organizations, the live electrical contractor-dealer should be, if he is not already, an active member of the volunteer fire department. His special knowledge will make him the man to whom the city officials and other members of the department will naturally turn for information on electrical matters, and this relation will not only bring him city business, but will enlarge his reputation and acquaintanceship, and bring private business as well.

Getting back to the matter of bank protection systems, the principal subject of Mr. Murray's article, protection of this nature is needed, especially in the smaller cities as evidenced by the frequent robberies mentioned in the papers. It is assumed that the modern electrical contractor-dealer has a bank account, and as a depositor has or should have a lively interest in knowing that his money is adequately protected. In his capacity as a depositor, as well as being the local electrical expert, he is the proper person to present and urge the installation of a bank protection system on the bank officials. The first installation having been made, others will come along easier.

The installation of a system in a single institution with an alarm signal either in the same building or outside, or in police headquarters or elsewhere is good, but the opportunity of the electrical contractor can extend farther than this. A number of installations in banks, jewelry stores, fur stores, curio stores and other establishments where merchandise of high value and small bulk is handled, all interconnected with a central board, provides not only a large amount of installation work, but also a continuing source of revenue from maintenance, and the contractor that gets a good start along this line will, as more business develops, become more firmly intrenched and need not fear competition in this field in his locality. There has been developed in Seattle a very comprehensive system under private control that gives auxiliary fire and police protection as well as watchman's report service. This company maintains a central switchboard, a storage battery plant, and interchanges signals with the city police and fire department headquarters. It operates on the closed circuit system. It has been found that bankers and merchants are willing to pay reasonable rates for protection service of this character, which includes visits by armed guards when a signal is received or a watchman fails to report.

It should be emphasized that the system that gives the best possible protection should be installed. This is the closed circuit system, preferably with remote signals. Although apparatus that may be considered standard has been developed, no standard installation will fit all cases. Each job should be studied by itself. It must also be borne in mind that the members of the Yeggs' fraternity are also studying protection systems, and are very ingenious in their schemes to put them out of commission. In a small town recently, the electric power and light wires were cut about a mile beyond the city limits, thereby putting every building and the streets in darkness just before a bank was robbed. In another case, where an open circuit system was installed with wires in pipe conduit, a length of conduit was loosened from the wall, cut in three places with a pipe cutter, the pieces bent into a V and the wires to the gong cut one by one. This would have immediately turned in an alarm with a closed circuit system.

The planning and installation of signalling systems will be found to be very interesting as well as remunerative and are worthy of more attention on the part of electrical contractors and the public.

J. R. KING.

Western Electric Company, Seattle.

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## Some Objections to the So-called Cooperative Profit-Making Enterprises

To the Editor:

Sir: In response to your inquiry regarding my opinion as to the objections to certain types of so-called "cooperative enterprises," that is, enterprises where the administration and financial functions have been assumed by the workers, I am pleased to submit the following common objections:

1. Laborers do not appreciate the value in service rendered by the administrative head and as a rule tend to reduce the administrative pay to the basis of wages.

2. Discipline is very difficult to maintain in cooperative societies for a very long period of time. There are many changes in the personnel and the spirit of self-sacrifice necessary for true cooperation develops slowly.

3. The size of present day business undertakings has as a rule outgrown financial possibilities of a group of former employes. Of course, this is not the case in every line, but is an important factor in most enterprises.

4. Banking credit is not liberally extended to cooperative societies because of the depreciation of administration, particularly accounting, and because of the instability of such organization.

5. There is a strong opposition to the cooperative movement coming from the trade unions. This is due on the one hand, to the fear that the interest in the one may be transferred to the other, and on the other hand to the difficulties involved when laborers who are members of unions

become employers. Some rules of the union, such as those regarding overtime and working conditions, are easily abused on the part of the cooperative society, which in truth reacts unfavorably upon the union. This is particularly true in Tacoma, at the present time, where several of these "co-operatives" in the electrical industry are charged with breaking union rules, while competitors of the cooperative have to abide by union regulations.

6. As a rule these organizations become an "advanced post" for socialistic and other propaganda. At the present time, in the Northwest the prominent leaders of the cooperative "shingle mill movement" (of which we have more than a score), have a hope that they may use the cooperative movement as a third rail for the promotion of a more ultimate purpose. Such leaders very often bring the movement into political allegiances unfavorable to business efficiency.

STEPHEN I. MILLER.

Northwestern Electric Service League.

## Data Regarding Gaps Still Existing in Great Interconnected Power System

To the Editor:

Sir: As you know, there is a gap in the electrification of the Milwaukee Railroad in eastern Washington and western Idaho. This gap is two or three hundred miles and is clearly noted on your excellent map of western hydroelectric systems. According to my understanding there is no connection in the Coeur d'Alene district between the Montana Power Company and The Washington Water Power Company.

There is not now and no probability of there being in the near future any connection between Portland and Eugene, that is, any usable connection. The Portland Railway's transmission system ends at Salem, and the Mountain States Power Company extends from Albany to Springfield. It was hoped to connect Albany and Salem by a 66,000-volt line, but this scheme fell through. When the California-Oregon Power Company gets built into Springfield the Mountain States Power Company will undoubtedly build from Albany north into Independence, still leaving a ten mile gap between Independence and Salem. It may be some time before this gap is closed.

It is true that the Oregon Electric Railway operates a transmission system from Portland almost to Eugene, but it runs at 33 cycles and is not suitable for interconnection. The Southern Pacific Company has a transmission line extending from Portland almost to Corvallis but these are mostly 13,200-volt capacity and not susceptible of carrying all the load, and the Southern Pacific objects to their lines being used for commercial purposes.

LEWIS A. McARTHUR,
General Manager.

Pacific Power & Light Company.

## Recommends Wide Publicity be Given Plans of Western Power Companies

To the Editor:

Sir: In your issue of February 15th, I think the plans of the western power companies as expressed in letters from the executives should be given wide publicity. This concrete proof that the various companies are planning even greater activities than had been previously reported will go a long way toward confirming the faith of those in the industry in the prosperous future ahead for these states during the coming years.

C. O. RHONA.

Ventura, Cal.

# Radio Bulletins

The Journal of Electricity and Western Industry has chosen the following events from the business, industrial and engineering happenings of the week as its regular weekly news report:

The Western States Gas and Electric Company of Stockton, California, has filed an application with the State Railroad Commission to float five million dollars in bonds to finance a hydroelectric development on the American River. The plans call for a plant which will generate 100,000 hp. and will ultimately cost one hundred million dollars. A license has already been secured from the Federal Power Commission.

The San Joaquin Light and Power Corporation of California will immediately install a second 17,000-horsepower unit to the Midway steam plant at Buttonwillow, in order to supply power to the Southern California Edison Company over a period of ten months.

The General Electric Company has recently purchased a site in the industrial district at Oakland, California, where it will erect a million dollar factory branch. The company is reported to have paid $100,000 for the site.

The Utah Power and Light Company of Salt Lake City has filed applications with the Federal Power Commission for use of the waters of the Green and Yampa rivers in Utah and Colorado through a series of nine power houses having an ultimate capacity of one million horsepower. The filings were made, it is understood, to protect the company in future expansions.

Congress has appropriated $700,000 for the improvement of the Klamath Irrigation District near Klamath Falls, Oregon. The project is to be turned over to ex-service men when completed and is a part of a national government land settlement plan.

The Journal of Electricity and Western Industry offers the following review of business conditions in principal western cities:

San Francisco: Reports on foreign trade out of San Francisco during the year 1921 have just been issued, showing a drop of forty-two per cent in exports and fifty-four per cent in imports over 1920. It is estimated that the volume of foreign trade has not fallen off to this extent on account of the extreme price reductions during the year. Unprecedented building activities continue, building permits for January totaling approximately six million dollars. Sales are reported as fair.

Los Angeles: A survey showing the loss to the orange crop to be approximately fifty per cent has resulted in the abandonment of many of the plans for 1922 by the citrus growers' association. The purchase of a line of refrigerated steamers for carrying the crop has been given up, while advertising appropriations have been cut in half. Prices for the crop continue to rise, however.

Portland: Foreign trade continues to hold its own with last year, owing to large shipments of wheat and lumber. Portland was the only Pacific Coast port to show a gain in shipping during 1921.

Seattle: Wholesale houses are preparing for a big year and dry goods houses report buying for fall as well under way. Prices show a five per cent increase on the average. The lumber industry has just completed its best week since the war peak period, the industry operating at 88% of normal.

Salt Lake City: Interest here is centered in reports of various railroads and public utilities regarding taxation valuation of their properties for 1922. All of the companies place a less value on their holdings, the Denver and Rio Grande seeking to pay on approximately two million dollars less than last year.

Denver: Prices paid for cattle and sheep in Denver during the past week are the highest since June, 1920—an indication of a revival in this market. Business generally is improving beyond the expectations of the most optimistic.

# Builders of the West

THE job of a mining engineer consists largely in devising production methods to fit economically with conditions in each instance different from those that have previously been worked out. It is an intensely practical occupation, developing in its followers a broad point of view and a distinct freedom from precedent. To be a successful mining engineer a man must be a capable executive and a business success. It is not strange then that one of the most successful businesses of its kind in the country, totally unrelated to mining, should have been developed by a mining engineer. The success of the Gates Rubber Company of Denver, Colorado, is directly attributed to the application of engineering principles to business problems by its president, Charles C. Gates, graduate of the Michigan School of Mines, and one of the successful engineers of the West. Starting with a capital of $3,500, Mr. Gates has in ten years built one of the largest manufacturing organizations in the West. Undoubtedly that simple statement sums up the story of this man, but it leaves out a world of thrilling details. His plant in 1912 was a small twenty-five by fifty foot workshop. Today, with acres upon acres of floor space, the Gates Rubber Company operates one of the most modern tire factories in the entire United States. Incidentally—as a side line, on might say—his company has become the largest manufacturers of automobile fan belts in the world. Radiator hose, another product, would seem a negligible item—yet they ship hundreds of miles of radiator hose monthly. The year 1921 is well known to have been an unsatisfactory year for the tire business as a whole, yet in 1921 Mr. Gates trebled his output of tires and in November resumed payment of profit bonuses to his employes, his company being generally credited with being the first in the rubber industry to return to a profit bonus basis. The man who has accomplished these things has become a cult to those who have followed his amazing conquest of national markets in the most highly competitive fields. Every product yet put on the market by Mr. Gates differs from others of its kind in some important respects. It is not enough for him that he makes a radiator hose, for instance, of best quality. It must have its own inimitable advantages of a clear-cut and practical nature. In this case his improvement was strikingly simple but it won him a market over-night. In the past, when a garage man had call for a piece of radiator hose he must measure the length required on the car and then measure, mark and cut that length from the three-foot section he carried in stock. Mr. Gates made a hose "marked in inches" on its outer surface. It is easily cut to length at a glance, without measuring or marking. Naturally, the dealer prefers handling this more convenient radiator hose, and Gates had by this simple means become a great factor in the hose market. So it is with his chief product, tires. Gates was not satisfied to make a tire merely as good as any manufacturer could make. His tire had to have a distinct idea behind it, a definite advantage. The result was his designing of a tire in which the flexing point of the carcass would permit the use of a wider and thicker rubber tread. This, by the way, was an accomplishment long sought after by tire engineers. Gates perfected it, explained its advantages to tire buyers by means of the simplest kind of advertisement, and the resulting sales kept his factory working through the period of depression.

CHARLES C. GATES

Mining engineer, manufacturer and civic leader of Denver, Colorado, who has developed one of the most successful and progressive industrial organizations in the country.

Like most extremely busy men, Charles C. Gates finds ample time for civic responsibilities. He is president of the Manufacturers' Bureau of the Denver Civic and Commercial Association. In this capacity he has recently effected a reorganization of this association into a more compact and workable form, after close study of the most efficient Chambers of Commerce in the land.

To Charles C. Gates, then, for his solution of the manufacturing difficulties which proved successful in a period of depression and for his development of an outstanding western industry, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

# Transcontinental Freight Problems vs. the Panama Canal

## How the Present Readjustment Period is Awakening in the Minds of Western Shippers a Fuller Realization of the Prevailing Unbalanced Rate Situation and a Discussion of Possible Solutions

By JOHN CUSHING STONE
Consulting Traffic Engineer

FOR the Pacific Coast producer the present period of freight rate readjustment is one of anxiety. This is, of course, common to the entire commercial and industrial field, and yet there is every reason to know that insofar as transportation charges are concerned the situation must right itself and that no permanent distress will prevail.

The current high freight rates were brought about by the urgent and immediate necessity, first in 1918 and again in 1920, for additional revenue for the railroads, which could only be accomplished by blanket percentage advances. Many of these increases were justified then and still are. Many of them cut seriously into the profits of the shipper and some of them were ruinous even at the time. Later deflation in prices has added to the latter two.

The plan was justifiable only in that there was not the time in which to consider each individual commodity increase of itself. In one way this enforced action was a good thing. It is axiomatic that the revenues of transportation lines must be sufficient for their support. If, therefore, any given freight rate is unreasonably and unnecessarily low the burden of supplying the deficiency in revenue must fall on some other traffic with a resultant unnecessarily high rate on the latter. An example of this character of low rates can be shown in that carried on crushed rock for roadmaking purposes in 1917. The rate for hauls up to thirty and forty miles was 25 cents per ton. This was advanced to 50 cents and later to 60 cents per ton. This is a class of traffic necessitating an empty car haul in one direction. The increased rate is not unduly high, has not injured the rock industry to a degree calling for relief, and has accumulated additional revenue to lessen the burden on other commodities unable to stand the present charges.

### Radjustment Is Progressing

These blanket increases had the effect of doing away with a vast number of dangerously low rates—of clearing the slate, so to speak. Such rates were the accumulation of years; the result of unremitting pressure; of conditions which seemed to justify them at the moment, and of poor judgment. The carriers, the shipping public and the commissions are now in a position to take each rate, or group of rates, put it on trial, and after the fullest investigation, reach conclusions based upon individual merit, and which will produce a rate structure fair to the carrier and profitable to the shipper. This is now in full swing and each day almost records readjustments to meet present conditions.

Those feeling the stress of injuriously high rates should realize that the factors governing the level of freight rates are at work now, as always, and these will ultimately, and I believe rapidly, bring relief where and in the measure warranted, and to the extent that a freight rate adjustment can accomplish it. The traffic manager of a railroad or the regulatory commission is not the real rate maker. The conditions surrounding the production, movement and marketing of the traffic, make the rates, and the personal equation enters into the matter only insofar as it is necessary that expert judgment tell us what these conditions spell.

All other considerations aside, a freight rate simply must be one which will lay the traffic down at the point of consumption at a figure returning a profit to the shipper. Any other adjustment would be suicidal to the transportation interests. It is self evident that a rate can be neither prohibitive nor unduly restrictive to a maximum distribution without affecting their income as vitally as that of the producer. The carrier is interested only in moving products from the point of production to the point of consumption and this must be done at a profit to the shipper or there will be no traffic to move. This, of course, cannot be carried so far that with every change in the labor market, or the price of containers or raw material reflecting the cost of production, or with every fluctuation in selling prices brought about through crop shortage or other reasons, the freight rate must follow up or down, but where conditions are not transitory, are definitely and reasonably permanent, the transportation charge must be adjusted accordingly. Nor can we expect that the natural rules of rate making will protect those locating factories at geographically ill-chosen points irrespective of their source of supply for raw materials or their natural distributing territory.

### Illustration in Fruit Industry

An illustration can be offered in the precarious situation of the California green fruit industry. The eastbound transcontinental rate has been advanced since 1917 from $1.15 per 100 lb. to $1.44 and again to $1.92 per 100 lb. The first advance was absorbed by increased prices, which is true also to some extent of the second increase insofar as the season of 1920 is concerned. That year showed prices at the peak. The season of 1921 witnessed a material price drop, in some instances actually resulting in red ink to the shipper, and the opinion prevails that prices will be still lower. The industry is faced this year with a strong probability of approximately prewar prices on the one hand and on the other with production costs on a higher basis than 1917 and the freight rate 167% of that in effect in 1917. Take

also into consideration a large increased acreage, as is evidenced by nursery stock sales, and it would seem to be time for a revision of the rate downward before real harm is done. A substantiation of the facts should find the carriers in full accord with the growers and shippers on this, as they can no more afford, than can the grower, the crippling of an industry representing over 100,000 carloads annually.

### Effect of Water Routes

Another and important element acting as a governor of freight rates is that of competition—not in the sense that competition exists as between rail lines or between water lines in the amount of the charge, for that is of the past, but competition in that respect does exist between separate methods of transportation, water vs. rail, principally because of lower operating costs of the former. The Pacific Coast is fortunate in that the Panama Canal will always exercise a certain control over the rate situation. The steamer lines through the canal contribute to lower rates than would otherwise be obtainable in that they can and do, with a reasonable return, handle what is known as dead freight between Pacific ports and Gulf and Atlantic ports at a differential under rail rates—practically their only disadvantage is that of time—about 28 days by water, as against approximately 14 days by rail. They can reach into the interior from the Pacific port or from the Atlantic port, and up the Mississippi River from a Gulf port, or indeed reach into the interior on the identical shipment at both ends. In these cases, however, they are handicapped not only in the matter of time, increasingly so as their point of origin or destination or both may be distant from the port, but also in the matter of transshipment, involving possible loss or damage and the fact that a local freight rate must be paid by the shipper at one or both ends. Their territory is therefore restricted to the extent that the differential under rail rates is equal to the task of absorbing the local rate or rates and still show a saving to the shipper. Paper may be shipped from Maine to an Atlantic port, thence trans-shipped to San Francisco; dried fruit may be shipped from the Santa Clara valley to San Francisco, thence by steamer to an Atlantic port and there forwarded to an adjacent interior point, all at a saving as compared with the all rail rates—but dried fruits cannot be moved from Fresno to San Francisco, thence by water to New York and result in a saving sufficiently large, everything considered, to be attractive.

### Possibilities in Shipment by Water

The possibilities of the water route are not confined to "dead" freight. Perishable commodities, such as apples and oranges, particularly the former, are today moved in refrigerator ships to Atlantic and European destinations. The citrus fruit people in pooling their members found 55 per cent of the growers favorable to Canal movement and are building steamers for this purpose. The deciduous fruit interests might to their benefit use water transportation, although it has two serious objections—a full steamer cargo arriving at, say, New York simultaneously with a large number of cars by rail would break the market. This could be obviated by intelligent distribution through the cooperative organization operating in California and by light cargo refrigerator ships. As to the further objection, that of initial handling from the interior of the ship, certainly with our splendid highways, automotive service, the best of care, equipment and facilities, we should handle this delicate crop without material loss. It does not follow that the rail lines will always follow the water rates, even at a higher level. They have intermediate traffic which cannot be touched by the steamer lines, to protect against loss in revenue, but the outstanding fact remains that the advantages of the service through the Panama Canal are such as to secure a large volume of freight, that potentially the Canal is available to even larger use, and will stand as an insurance against unreasonable rail exactions.

The success of the first direct shipment of oranges from California to Europe and of experimental shipments to the Atlantic Coast by way of the Panama Canal during 1921, has resulted in the construction of special refrigerated vessels which will handle a part of future shipments.

# Should the Pacific Coast Expect a Severe Depression in 1923?

## Walter V. Woehlke, Managing Editor of Sunset, Replies to Roger Babson's Statement that the Pacific Coast Should Make Preparation for a Considerable Decline During the Coming Year

IN view of the fact that Roger W. Babson, president of Babson's Statistical Organization, is reported to have predicted that the Pacific Coast is due for a severe depression in 1923, the following extracts from a letter from Mr. Babson to the editor of the Journal of Electricity and Western Industry are of considerable interest.

"The present period of business depression originated in January, 1920, in the industrial centers of New England and radiated to other parts of the compass, gradually spreading toward the South, the West and Canada. This is the typical path of a business disturbance and has applied not merely to the present reaction, but to all previous periods of depression for which we have records.

"This means that the Pacific Coast does not ordinarily experience deflation until two years or more after the disturbance has first appeared in the Northeast. A study of business records shows that thus far the depression has run true to form. We anticipate that the Pacific Coast will not be immune to a depression, and that a reaction in this section of the country has merely been postponed. During the coming year we look for the development of considerable decline in the Pacific Coast region, especially toward the south of this district, a locality which heretofore has held up remarkably well. It is true, of course, that many parts of the Pacific Coast did not profit by the war activities and the post war boom to such an extent as certain cities in the East. To this degree, therefore, the decline may be modernized in accordance with the law of equal and opposite reaction.

"But even making due allowance for such a tendency we still feel that all business men with interests on the Pacific Coast should be prepared for an appreciable slowing up of business. We have already mentioned the fact that a business depression tends to move in a southerly direction. This has been illustrated on the Pacific Coast by the fact that the localities toward the north have already experienced a considerable drop. These localities towards the north have taken their medicine, so to speak, and therefore their outlook is relatively good as compared to the southern parts of the Pacific Coast. Lumber, the basic industry of the Pacific Northwest, also promises increasing activity beginning with the spring of 1922. More equitable freight rates to the East and large unfilled demand for residential building and continued export trade with the Orient should result in increasing activity in the various branches of the lumber industry. During 1922 there is likely to be improving markets in Washington and Oregon, but as you move toward the South the prospects become increasingly unfavorable."

The point of view of a western authority, who disagrees thoroughly with Mr. Babson's statements, is expressed in excerpts from a letter by Mr. Walter V. Woehlke, Managing Editor of Sunset.

"California particularly and the Pacific Coast as a whole did not during the last year suffer as much as the East or Middle West on account of their peculiar position. And this peculiar position will continue to keep the business conditions and the purchasing power of the Pacific Coast above the average of the country.

"In the first place, there is no large scale industry on the Pacific Coast which has suffered through the decline of its markets. There are hundreds of jobbing and specialty shops which continue to do a fair amount of business, and there is a sizable number of real factories supplying only the local market which, as you know, has not declined in the same ratio as the markets in the rest of the country.

"Aside from the comparatively small amount of manufacturing, the principal activities of the Pacific Coast are first, agriculture, second, mining, third, lumbering. The Middle West is down and out, principally because its staple products, such as corn, oats, rye and wheat are selling at pre-war prices or below, whereas the cost of production and transportation has not been reduced in the same degree.

"On the Pacific Coast these staples do not dominate agriculture. The farming industry is extremely diversified, and the value of the fruit crop far overshadows the value of the cereals produced. In 1920 and 1921 when the agricultural staples everywhere hit rock bottom, fruit prices remained at a fairly high level. During the war the fruit-eating habit became firmly established, cooperative marketing organizations have become perfected and there is no reason to believe that this year or next year there will be a material decline in the receipts of the far western fruit growers. California's walnut crop, for instance, was entirely disposed of within four months after the harvest at the price fixed by the Association.

"The orange producers are in good shape; raisin and wine grape producers have made startling profits; the prune and apricot growers have disposed of the 1920 surplus and the 1921 crop is moving into consumption at a price that leaves the growers a profit. I might continue the recital, but the conditions described apply to horticulture in general throughout the territory. The only weak spot that may develop this year and next is in the apple regions. There production has reached such a high level that the growers must depend upon great prosperity in the East or upon the failure of the eastern apple crop, an event which occurred last season.

"The two weak spots in the agriculture of the Far West are hay and livestock. Prices of alfalfa hay have been very unsatisfactory, but this situation is remedying itself gradually through the increase in the dairy herds and through the beginning of a movement of alfalfa hay from the Pacific Coast to the Atlantic Coast via the Panama Canal.

"The livestock industry was very hard hit. Because of the blow it sustained two years ago, it is now on the point of recovery. The forced liquidation compelled the producers to reduce their herds drastically, to sell even a part of the breeding stock, until today the remaining herds are hardly able to keep up the supply. The slightest improvement in the demand will raise the price and put the industry on its feet again.

"About lumbering: In 1922 building activities will be greater than they were in 1921. All of which means that the western mills will be called upon for a greater lumber output. It should also be remembered that the southern supply of yellow pine, principal competitor of the far western lumber, is diminishing constantly, and that with this shrinking the price of western lumber must either remain stationary or go up.

"The third of the basic far western industries is mining. Owing to the decreasing cost of labor and material, gold mining is now on the upgrade for the first time in five years. By June of this year at the present rate of curtailed consumption the last pound of the surplus copper now available will be used up. In the meantime, eighty per cent of the far western copper industry has been shut down absolutely. It is now reopening in part. In other words, the mining industry is so far down at present that it cannot grow anywhere except up.

"On the basis of these facts, all easily corroborated, it is impossible to figure out how depression can hit the Pacific Coast, the Far West and California while the rest of the country improves.

"After all, our prosperity is based upon our ability to produce goods for sale in the Middle West and the East. During the time when our principal markets were in the worst shape since 1893, we managed to retain a higher degree of prosperity than the rest of the country. Would you say that we would sink deeper into the mire when our markets begin to mend and to call for more of our products?"

# Western Power Companies Push Electric Range Campaigns

## Nine Electric Range Campaigns Now Under Way in the Western States, with Four Planned for the Near Future, According to Survey Made by Journal of Electricity and Western Industry

OVER thirty thousand electric ranges were reported on the lines of forty of the western power companies, according to a survey just completed by the Journal of Electricity and Western Industry. This represents a load of 162,535.5 kw. and a monthly return to the power companies of approximately $140,000. Of these figures, data on 23,273 ranges were reported by 26 power companies representing conditions on their lines in January, 1922. Where no up-to-date information was obtained from the company, but 1919 figures were available, a factor of 85 per cent increase was applied to the number of ranges on the company's lines and to the kilowatt load and these figures used, as indicated in the table. This factor was obtained by averaging the percentage increase of seven companies in this territory for which both 1919 and 1922 figures were available. Figures from the 1919 data were also given for the average capacity of the ranges, average consumption and average monthly bill, and have been added to the table largely from the standpoint of their interest in showing that the average size of range installed has increased in the two years from 4.38 to 5.5 kw. and the kilowatt-hour consumption from 142 kw-hr. to 179 kw-hr.

Interesting information was obtained from the power companies on past and present policies in regard to the pushing of ranges. From these replies, it appears that out of 26 companies, eight are now carrying on active range campaigns and four announce campaigns for the near future. Of the remaining companies not pushing ranges, two are now offering special rates on ranges, although they are not pressing their sale by special advertising or soliciting, one is selling at list, but installs free of charge, and one company is carrying some advertising and displaying ranges in its offices, but is pushing their sale only through contractor-dealers. Three companies express dissatisfaction with present prices, but state that they will be glad to push the sale of these appliances when they are listed more attractively. One company states that it is prepared to urge the sale of this appliance only if it is allowed more attractive rates.

Eleven of the companies, including practically all those which now have the largest blocks of ranges on their lines, state that at some time during the period since 1915 they have conducted special range campaigns. Of these nine companies report selling below list, the campaigns resulting in placing 4,800 ranges upon their lines. Two companies sold at list, making a full charge for installation. These report 127 ranges placed upon their lines. Of those selling below list, three quoted the appliance at the list price, but included in this the charge for installation. All others offered special prices for the range, varying from 10 per cent below list to cost price. The charge for installation differed. Five of the companies either charged the full price for installation, or left it to the electrical contractor to install at his own price. One made a special price on the installation, one installed at cost to the power company, and one installed free of charge. This last instance was that of the city of Seattle which made a special feature of selling one carload of ranges at cost, installing them free of charge.

All companies conducting range campaigns at the present time sell on terms which are in effect

DATA ON ELECTRIC RANGES AND WATER HEATERS REPORTED BY FORTY-ONE WESTERN POWER COMPANIES

| | Number Companies Reporting | Number Consumers | Number Ranges on Lines | Total Kw. Range Load | Average Kw. per Range | Average Kw-hr. per Range per Month | Average Monthly Bill per Range | Effective Rate per Kw-hr. | Number Water Heaters on Lines | Number Companies Now Pushing Ranges | Number Companies Planning Future Campaigns |
|---|---|---|---|---|---|---|---|---|---|---|---|
| California | 10 | 665,379 | 7,973 | 49,225 | 6.2 | 155 | $5.31 | $3.43 | 3,619 | 4 | 2 |
| | * 1 | 4,000 | 72 | 277 | 3.9 | 200 | 6.00 | 3.00 | .... | .. | .. |
| Oregon | 2 | 62,426 | 1,580 | 9,080 | 5.74 | 141 | 4.90 | 3.47 | 75 | 2 | .. |
| | * 5 | 29,600 | 1,117 | 4,891 | 4.3 | 110 | 3.30 | 3.30 | .... | .. | .. |
| Washington | 5 | 153,792 | 8,772 | 49,624 | 5.64 | 235 | 4.60 | 1.96 | 4,679 | 2 | 1 |
| | * 1 | 852 | 74 | 259 | 4 | 122 | 3.66 | 3.00 | .... | .. | .. |
| Colorado | 2 | 70,701 | 89 | 494 | 5.55 | 166 | 7.89 | 4.75 | .... | .. | .. |
| | * 2 | 1,512 | 222 | 906 | 4.8 | 119 | 4.90 | 4.12 | .... | .. | .. |
| Utah | 1 | 1,275 | 112 | 670 | 6 | 197.4 | 3.60 | 1.82 | 20 | .. | .. |
| | * 1 | 49,863 | 2,908 | 11,038 | 3.8 | 159 | 3.57 | 2.25 | .... | .. | .. |
| Idaho | 3 | 43,098 | 4,583 | 18,115 | 3.95 | 129 | 3.16 | 2.45 | 3,369 | .. | .. |
| Montana | 1 | 5,000 | 130 | 780 | 6 | 125 | .... | .... | 35 | 1 | .. |
| | * 4 | 30,684 | 3,307 | 15,031 | 4.54 | 125 | 3.10 | 3.10 | .... | .. | .. |
| Nevada | * 1 | 5,131 | 148 | 925 | 6.25 | 100 | 3.15 | 3.15 | .... | .. | .. |
| Arizona | 2 | 1,800 | 34 | 200 | 5.29 | 180 | 4.50 | 2.50 | 79 | .. | 1 |
| Total Reporting | 26 | 1,004,471 | 23,273 | 128,188 | 5.5 | 179 | $4.55 | $2.54 | 11,876 | 9 | 4 |
| Estimated from 1919 figures | *15 | 121,522 | 7,842 | 34,347 | 4.38 | 142 | 3.98 | 2.80 | .... | .. | .. |
| Total | 41 | 1,125,993 | 31,115 | 162,535 | 5.33 | 176 | $4.49 | $2.55 | .... | .. | .. |

**Figures in lines so indicated represent 1919 figures of companies for which 1922 data was not available, except in the columns "Number Ranges on Lines" and "Total Kw. Range Load," where an 85 per cent increase has been assumed. This percentage was obtained from an average of the growth shown by seven companies for which figures were available for both years.*

below list. These terms vary from a flat price for range and installation, to a list price quoted, with a marked discount for cash payment. Most of them, however, charge the full price for installation or turn it over to the contractor-dealer, making the reduction to the customer in the quoted price of the range. An idea of the various types of prices may be gained from the practices of the following companies:

| | |
|---|---|
| Idaho Power Company | Ranges at list, with 10% off for cash. Installation left to contractor-dealer. |
| City of Tacoma | Ranges 25% below list. Installation left to contractor-dealer. |
| City of Seattle | Ranges 15% below list. Installation —allow $75 exclusive of transformers. |
| Northwestern Elec. Co. | Ranges 10% below list. Customer stands cost of inside connections. |
| Portland Ry. Lgt. & Pr. | Ranges 15% above cost. Installation costs added. |
| San Diego Consolidated Gas and Electric Co. | Ranges 10% below list. Installation at cost. |
| Western States Gas and Electric Co. | Ranges and installation at flat price. |
| Pacific Gas and Electric Company | Ranges (where installed by the company) 40% above cost less 10% for cash. Installation $60 flat rate. |
| Great Western Pwr. Co. | Ranges at cost. Installation borne by the consumer. |

Of the companies which state that they are not now pushing ranges, seven sell ranges at list price, two at prices below list and seven leave the entire question of ranges to the contractor-dealer.

Figures of particular interest are those on water heaters. Of the power companies reporting, all who were pushing ranges also encouraged the sale of water heaters. Apparently at the present time there is represented on power company lines an average of one water heater to every two ranges.

There was very general approval of the use of the double throw switch with water heater installations, although replies on this subject were not complete enough to tabulate. Both flat and meter rates were reported, with a tendency to abandon the flat rate system expressed by two of the power companies reporting.

In reply to the question, "What type of water heater do you encourage?" 5 companies expressed approval of the Clamp-on type, 17 of the circulating type, 6 of the storage type, 5 of the continuous type and 3 of the demand type. Several of the companies accepted all types of heaters. Of those expressing preference, the circulating type was commended by all but one company which specialized in Clamp-on heaters.

In general, it may be seen that there is considerable activity in the line of both ranges and water heaters in the West at the present time. On the other hand, there is apparently some feeling that the present price of ranges is too high to prove attractive to customers, expressed both in the campaigns quoting ranges below list price and in the hesitancy of some companies to press this equipment until prices shall be somewhat lower.

## "Natural Steam" Plant Is Proposed at The Geysers in California

PRELIMINARY work is well under way at The Geysers, about 75 miles north of San Francisco, California, on a project for developing power with the steam which is continually escaping from the earth there. The development proposed would be similar to that at the Larderello installation in Italy that has been using heat from the earth to operate a steam turbine plant for a number of years. Proponents of the California project are advising with the engineers who installed the Italian plant, particularly with reference to the means of eliminating corrosive gases.

Preliminary work at The Geysers has included the driving of several wells to determine temperatures, pressures and quantities. In the district being explored temperatures ranging up to 350 deg. F. are found in many places at the surface over an area about one-half mile square and it is believed that these temperatures increase very materially below ground. With these temperatures water that becomes imprisoned beneath the earth surface is transformed into steam with explosive violence. With the casing open and clear at the top, water put down the well in just the right quantities comes back in the form of steam shooting out under high pressure. By applying this method with caution, muck made by the churning of the drill can be blown out of the hole.

$H_2S$ and other gases are encountered at The Geysers, but it is claimed that corrosion occurs only when metal is exposed to the gases in the open air. That is, the interiors of pipes carrying the vapor and pipes entirely buried in the earth are not affected. Both gaseous and liquid samples have been sent to Italy for analysis by the same methods applied at the Larderello plant. In the Italian development, drillings were made to depths up to 495 ft. to secure the temperatures required for the turbines, While at The Geysers the same temperatures are said to be found at depths of about 75 ft. The original method at the Italian plant was to use the steam as the source of heat for evaporating water which in turn was used in the turbine. Based on their later experience, however, the plant at The Geysers is to be arranged to use a gas filtering or purifying process so the live steam from the vent can be used directly in the turbine.

Should it prove feasible, after proper analyses have been made, it is planned to separate certain chemicals from the steam, this having proved practicable in the Italian installation at Larderello referred to above.

The present plan is to install first a small plant developing 300 to 500 kw. with which to supply power for further exploration and construction work. It is proposed then to install a much larger plant, possibly about 20,000 kw.

The project is in charge of J. D. Grant, The Geysers, Sonoma county, California.

# The West Harvests Returns from Electrical Home Campaigns

## Great Activity in Campaigns Directed Toward Increasing the Domestic Use of Electricity From All Parts of the West. California Survey Indicates Success of Early Home Electrical Displays

ELECTRICAL HOME campaign activities are being carried on in all districts of the West and plans are on foot for an even more thorough educative campaign during the coming year. Including the Denver home which is now almost ready for exhibit, six electrical homes have been completed and displayed during the past six months and definite plans are under way for seventeen more to be erected in Washington, Oregon, Utah, Colorado and California during 1922. With attendance at such exhibits running from 10,000 to 85,000, as has been indicated by electrical homes held in the past, it may be seen that during the coming year something like half a million people in the West will hear the story of the convenience outlet and the use of electricity in the home, in the most effective way that it can be told. During this same period something over $160,000,000 will be spent in home building in the western states, according to estimates of the Twelfth Federal Reserve District.

How much of this expenditure will be turned into the channels of electric wiring and equipment over and above what would have been expended without these electrical home educational campaigns is indicated by the recent survey of building conditions which has been conducted in San Francisco and Los Angeles by representatives of the California Electrical Cooperative Campaign. This took the form of the inspection of homes, office buildings and hotels under construction, with a view to ascertaining how many convenience outlets were being installed. As a result of this survey, it has been stated that while no definite figures may be given for all construction, it is safe to say that 99 per cent of the homes now being constructed are electrified in the sense that they provide at least one convenience outlet for each room.

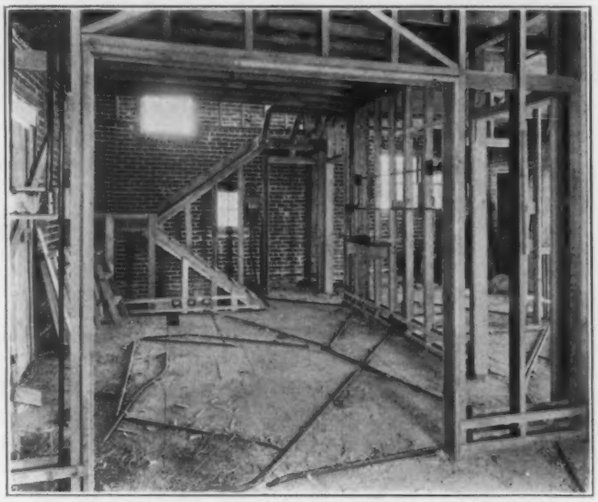
The investigation was not confined to high-priced homes, but included all types of construction jobs, the residences inspected having an average of 5½ rooms. In the San Francisco bay district 120 homes under construction were examined, with the following encouraging results:

| | |
|---|---|
| Average cost of each home | $5,500 |
| Average number of rooms per home | 5.5 |
| Average number of convenience outlets per home | 6.2 |
| Percentage of convenience outlets to total number of outlets in each home | 17.66% |

Of particular interest, was the widespread attention which had apparently been paid to the laundry. In ninety per cent of the homes examined, special laundry space was provided, with at least two convenience outlets for washer, mangle and iron.

Besides the homes inspected, a similar survey was conducted of office buildings. Sixteen office buildings examined showed a minimum of two and a maximum of four convenience outlets per room.

The general adoption of the electrical idea in hotels and apartments is to be seen in the tendency to feature electric facilities in advertising such establishments. One new hotel in Los Angeles with 450 rooms shows a total of 960 convenience outlets. An Oakland apartment house now under construction at



The wiring layout for a typical electrical home is well shown by this construction view of the Denver home, scheduled to open early in March.

a cost of $1,000,000 and one of a chain of similar apartments to be built in this vicinity, is to have 40 apartments of five rooms each, which are to rent at a minimum of $125 per month. Each apartment is to be provided with 10 convenience outlets, 3 in the living room, 2 in each bedroom, 2 in the dining room and 1 in the kitchen. Besides this, there is provided a completely electrified laundry, servants' quarters and a service garage, which is to cost $35,000.

The Los Angeles survey has not been completed, but a progress report indicates that figures will confirm the results of the San Francisco investigation. Reports from architects and builders from elsewhere in the state show that the same influence has been felt throughout the state and that the effect of the electrical homes which have been staged during the past year may be said to be state-wide.

The figures are a striking tribute to the value of such exhibitions. Not the least of the effect of the demonstrations has been the education of the electrical industry itself and its consequent united efforts in following up these campaigns. Electrical wiring pamphlets, follow-up publicity and a more general emphasis upon the convenience outlet have done much in making effective the message originally told by the electrical home. Through these efforts it may be said that the wiring appropriation for the average home in California has at least doubled.

# Progress of Industry Handicapped by Lack of Engineers

## In the Concluding Article of a Series of Three, Mr. Leury Describes the Effect on the Electrical Industry of the Absence of Trained Industrial Electrical Engineers in Manufacturing Plants

By LOUIS F. LEUREY
Electrical Engineer

IN two preceding articles the writer has attempted to picture the condition of electrical usage in industry as it actually exists, without exaggeration and without any attempt to palliate these conditions. He has tried to show that the fundamental weakness in the industry consists of a faulty distribution of engineering personnel by which practically all of the trained electrical engineers are found in the ranks of the power companies, manufacturers, and jobbers, and practically none on the side of the user. He has tried further to show that this condition has robbed the user of his creative instinct and has resulted in a number of major abuses which have cost the users great sums and have retarded the extension of electrical usage which would have benefited the entire industry. It cannot be disputed that any part of a factory process or equipment will yield a return in proportion to the amount of competent thought and effort which is expended in its installation. These articles seek to show that such thought and effort applied to the industrial application of electricity can only be efficiently employed through the agency of trained industrial electrical engineers in the direct employ of the larger manufacturing companies, or by practicing industrial electrical engineers who can best serve groups of the smaller companies. These men will develop to a much higher degree of efficiency the operating electricians who are now serving the plants and will act as effective interpreters of the special needs of each industry to the electrical industry as a whole. When this desirable condition is achieved, then, and only then, will the factory owner be safeguarded in his investment and the electrical industry see the amplification of electrical usage that it so much desires.

But before any advance can be made the major groups within the electrical industry must become convinced of the fact that shameful conditions exist and the will to correct these conditions must be stimulated. The writer does not believe that this desirable advance can be made unless it be done strictly from an economic basis. Like Mr. Emory Wishon, he is a believer in the doctrine that the intelligent self interest of each branch of the industry must be first aroused and he will endeavor to show briefly in what measure this self interest exists.

As usual, from its very broad point of view, the press has been ahead of all other branches of the industry. The McGraw-Hill publications, in particular, have been preaching with regularity in their editorial columns the necessity for industrial electrical engineering within the factory. Many advanced types of industrial electrical practice evolved by trained industrial electrical engineers have been described in their columns. The press will have to continue this good work because in a peculiar manner its prosperity depends on new and efficient applications of electricity.

### The Power Company

The power companies would, without question, welcome the advent of trained industrial electrical engineers because in numerous ways it would be to them a direct economic advantage. With the accurate knowledge of factory conditions possessed by such engineers, the power company would be assured of a minimum investment in transformer and substation equipment and fullest cooperation in such important matters as maximum demand, voltage regulations and power factor. In addition to these advantages on the engineering side, there would be further and very material advantages from the commercial side. It will be accepted, I am sure, as axiomatic that a plant, all of whose elements are thoroughly coordinated, will be a more consistent and a larger consumer of electrical energy than one of the haphazard type. It has been the writer's direct experience that the satisfied owners of well-designed industrial electrical equipments are continually seeking to extend the field of electricity in their factories. Another angle to the commercial situation which is a constant source of annoyance to the power companies and one which in the aggregate, causes them to spend needlessly many thousands of dollars, is the misunderstanding by the customer of his bill or of some condition of his service. In probably 90 per cent or more of the cases the customer has but an imaginary grievance.

### The Manufacturer and Jobber

Ask the manufacturer to tell you how much it is costing him to serve electricians or master mechanics who have insufficient knowledge, and who are constantly swayed first to one side and then the other by the breeze of every competing argument. Ask him again to tell you what it costs to sell his equipment to a purchasing agent who is necessarily non-technical and to whom the requisition comes as a cold piece of paper. The writer has known of case after case where untrained men, in trying to arrive at the solution of a problem, would have a salesman from every jobber in the district furnish hours of his time and columns of figures. How different is the contact of these salesmen with a trained engineer and what a world of effort is saved, and how greatly it reduces the problem of returned merchandise!

But, the best of all, the manufacturer could eliminate the cost of competition with devices so evidently deficient in design or quality that a technical man would eliminate them from consideration

at first view. Thousands of dollars per year in unnecessary costs are borne by each manufacturer or jobber due to this practice and to the exchange of goods that could be obviated by proper technical assistance given at the factory and to the purchasing agent.

**The Contractor-Dealer**

Here is one man above all that suffers most for conditions not of his own creating. He has to bid on specifications drawn by amateurs, which tell him how to refine copper at Bayonne, N. J., but do not tell him anything of the job in hand. Specifications drawn for a San Francisco industrial plant could be used without change in the wiring of a Kimberley diamond mine. Hiding behind such phrases as "The code shall govern," they force the contractor to be the goat of any eventuality. If the contractor puts on a sufficient margin to legitimately protect himself against an ignorant specification, he may lose the job to a "curbstoner," and if he gets the job, the owner has paid two fees for design and gets nothing from either. Where the contractor does the work without plans or specifications, he often very innocently "gets in wrong" with the owner. The owner instructs him from day to day to add this motor and that switch until the day of settlement arrives, and often blames the contractor for cost of work which has been well and economically done but which has never been planned or budgeted.

It is almost needless to say that the most effective ally that these commissions could have in the factory would be the industrial electrical engineer. These regulatory bodies feel that where competent electrical engineers are employed they can forget that particular industry and concentrate on others where they are more needed. A well distributed group of industrial electrical engineers throughout the West would lighten the field inspection work of these bodies and allow them to concentrate on the more important research work and statistical work which guides the whole movement.

**What Remedy Can the Industry Apply?**

In the above paragraphs the writer has tried to show how these groups, as well as the industry in general, in addition to specific losses suffer a still greater potential loss through the failure to rapidly extend the field of electrical usage. It would seem to be sound business sense on the part of these groups and of the industry in general to set about immediately to correct this condition as fast as circumstances would permit. The electrical industry, functioning through the technical press and through the Cooperative Campaign bureaus, is spending thousands of dollars to promote the adequate use of electricity in the lighting field. Is it the logical thing that it should spend none in the still greater fields of industrial motor drive, industrial heating, and the other applications of electricity as a medium in industry? If it is impracticable for individual companies alone to properly introduce good lighting methods to the public, it is equally impracticable for individual companies alone to introduce better industrial methods under present conditions. The industry cannot properly advance until an intelligent agency can be developed which has the confidence of the manufacturing industry on one side and the confidence of the electrical industry on the other, and which can properly interpret each to the other.

If this be so, let the electrical industry as a whole function through its press, its regulatory bodies and through each individual member, using its cooperative funds to start a campaign of publicity and education among the factory owners which will show them the necessity for trained industrial electrical engineers within the factory, to the end that mutual understanding and good will will promote the common good of the electrical as well as all other industries. Manufacturers' representatives have told the writer that while they recognize the necessity of trained industrial electrical engineers in the industry, they did not know where to turn to locate such men. The truth of the matter is that under the existing order of things, with every other branch of the industry furnishing the owner unlimited engineering without charge, and furnishing him with a degree of service out of all proportion to the necessities of the case, it has not been possible until recently for the industrial electrical engineer to survive. With the growth in magnitude and importance of western industrial establishments, the very size and complication of the electrical problems has forced some of the larger manufacturers to employ or retain trained industrial electrical engineers. In the East, a great number of able men are represented in this profession, both employed by the manufacturers and in private practice, and I feel sure it is no exaggeration to say that the greater advances in factory electrification which have been made in the East are due, in a large measure, to the direct contribution of these men.

Here is a chance for our western educational institutions to throw the weight of their influence into the breach and serve the double purpose of promoting the art of engineering and the economic well-being of their graduates. From a superficial viewpoint, the writer cannot conceive of a more discouraging outlook than is faced by the graduate in electrical engineering from our universities. With the great interconnections and consolidation of power supply companies, where does the electrical graduate turn for employment? In civil and mechanical engineering, hundreds of these young men go forth into the diversified fields of manufacture, transportation, shipping, and agriculture—but no such fields await the electrical graduate. Would it not be well for the universities to study the application of electricity in industry as a potential and important field for the electrical engineering student?

In conclusion, the writer feels that in the existing industrial applications of electricity there is a great national waste, but a waste that can be easily and successfully attacked. The responsibility of the electrical industry for these conditions is clear and cannot be shirked. When the industry squarely faces this problem, no time will be lost in applying correctives which are so obviously at hand.

# A FEW IDEALS TO SHOOT AT

**IN an effort to bring about a unity of effort in all sections of the nation, the editors of the Journal of Electricity and Western Industry and Electrical Merchandising have agreed upon the following ideals as basic in the electrical industry. We offer them as sensible suggestions for commercial policies which should be advocated by electrical men of every class and established gradually as standards for us all.**

1. That electrical men more generally must come to recognize the great and unparalleled opportunities for service to mankind which electricity affords in its manifold and increasing applications,—in factories, construction work, transportation, shops, stores, offices and homes,—and that "to get **more people to use more electricity in more useful ways,**" is an obligation which devolves upon every electrical man, as his responsibility to the public and to the electrical industry.

2. That all electrical men should themselves use electrical appliances and live in electrical homes as a continuous living demonstration in their communities, of the comfort and economy of "doing it electrically."

3. That the local electrical family in every community should organize and harmonize its interests, purposes and policies so that the public will see electrical men agreed on principles and working together in friendly cooperation.

4. That the electrical business, in order to secure successful men must offer prosperity in generous measure by paying salaries and offering participation in profits sufficient to attract men of brains and ability, in open competition with other lines of busness.

5. That electrical men of all branches of the industry should invest a portion of their savings in electrical business enterprises.

6. That the electrical industry through a joint commission of retailers and jobbers and manufacturers should make a thorough survey of methods and costs in the distribution of domestic electrical appliances, in order to discover where wastes in such distribution occur, what they cost, what wastes can be prevented and how, and to provide a sound foundation of facts on which to determine what are fair margins for any and all distributing agencies between producer and consumer.

7. That every electrical business concern should know its costs, both for the protection of its own prosperity and its obligations to the trade of which it is a member.

8. That one voltage, one frequency, and one kind of current, should be made a universal standard for commercial and residence service in all communities, as fast as existing systems permit, and that immediate steps be taken to agree on such a standard,—possibly 110 volts, 60-cycle alternating current.

9. That the generating and distributing of electricity is the prime function of the central station, and that no secondary activity should be engaged in that jeopardizes this main objective. The central station, however, should recognize its responsibility in the development of the local market for energy using appliances and should make its salesroom headquarters for all appliances and a friendly, sympathetic pace-maker for all dealers in the intensive selling of electrical appliances.

10. That electric public service companies should sell their securities, widely distributed, among their local public, so that the people of each community will feel a personal interest in its utilities companies and an obligation to treat them fairly.

11. That all light and power rate schedules and contracts should be simplified and humanized and be so expressed that the customer will no longer be bewildered and offended.

12. That central stations should, where practicable, discontinue the practice of requiring a deposit before consenting to supply current to a new customer.

13. That, in order that the public may understand their electric bills more clearly, steps be started to have all house meters read directly in figures to indicate the kilowatt-hours consumed, or even in dollars and cents, with a "trip tally" to give the month's consumption, as well as a tallying of the grand total.

14. That residential meters should preferably be installed in protected positions outside the house or apartment so that the meter reader need not enter the house, the expense of return calls may be avoided, the customers may be saved annoyance, and good-will for the public service industry may be promoted.

15. That central stations should not disconnect residences when vacated, so that electric service may be immediately available upon the re-occupation of the house.

16. That all appliances sold by central stations, except during pioneering periods, should be sold at a merchandising profit and all repair jobs be done at a profit so that the sales department, carrying its proper share of overhead expense, may pay a profit to the stockholder on the business it has done, at the same time avoiding destructive competition with others in the industry.

17. That in cases where the central station does a merchandising business its salesroom should be equipped and organized as a real store, to do a straightforward merchandising business that will serve as a pattern, guide and stimulus to other local stores selling electrical appliances, in order that the greatest possible number of appliances shall be sold, no matter who sells them.

18. That the man in charge of the business side of a central station should be made responsible for all contacts and relations with the public, including not only selling and advertising, but inspection and trouble service to the customer, the sale of company securities to the public, and all the civic activities and trade relations of the company, concentrating this entire authority in a man big enough to function in this larger way.

19. That the central station commercial executive be regarded as occupying the position of sales promoter and friendly adviser for the entire local electrical selling family, charged with promoting the business success of each and all of the local concerns, and in this way promoting the company's business. Lists of electricity users and appliance owners should be shared by the central station with local dealers, to promote the sale of appliances. Central station advertising should list names and addresses of all local dealers as well as the company's own electric shop. It is to the central station's interest to foster and encourage all possible retail sales by any retail dealer in its community.

20. That employes of central stations, manufacturers, jobbers and dealers should be assisted to equip their homes electrically by permitting them to purchase and pay for equipment by installment deductions from their salaries so that each electrical man's home may become an example to the neighborhood in which he lives.

21. That the central station, in so far as practicable, should make its lighting and power bills payable at neighborhood electrical dealers' stores.

22. That central stations should render a "Service of Correct Time" by some convenient means or signal—possibly dimming of the lights for an instant at 8 p.m. each evening to flash the correct time to the entire community.

23. That central stations should assume the leadership in their own territories in the effort to bring about the complete standardization of plugs on the basis of the attachment plug with the parallel blades, standardization of plugs at the appliance end of cords, and the standardization of other fittings, ratings and labelings that now confuse the public.

24. That in customers' installations all exposed parts of electrical circuits from which the layman is likely to get a shock, be covered up. This means the installation of safety switches, dead-front panels, dead-front receptacles, porcelain sockets and switches in damp places, insulators in pull chains, etc.

25. That the electrical trade think and practice "Quality Electrical Work," using quality materials. This means that owners, architects and builders must be shown the advantages of equipping houses throughout with "convenience outlets" and that their use be promoted by this name; that plugs and receptacles be standardized; that fuses and switches be properly labeled when installed, and fuse blocks be marked with proper sizes to be used; that dining room tables and other furniture where it provides convenience be wired for connecting appliances; that fixtures be equipped with standard-plug connections to provide interchangeability; that lighting outlets and switches be located with regard to the principles of good illumination and convenience; and that meter-boards be so located that meters can be read without entering the house.

26. That manufacturers' jobbers, central stations and dealers should apportion a percentage of their sales appropriations and effort to the development of markets for those appliances that still need pioneering and build them up to the point where they become staple merchandise.

27. That electrical manufacturers and jobbers should publish net prices and abandon the confusing system and wasteful expense of combining list prices and discounts.

28. That discounts in the chain from manufacturer to jobber to dealer be so adjusted that every man who has a function gets paid for it.

29. That manufacturers should extend the jobbers discount not for quantity purchases, but only to responsible organizations that perform the economic and service functions of a jobber.

30. That electrical jobbers should make a physical separation of wholesale and retail business,—where for local reasons it is not expedient to hang up the "Wholesale Only" sign and bend their energies exclusively to their function of distributing to the wholesale buyer and to stimulating the retailer to greater activity and more efficient methods.

31. That electrical contractor-dealers, jobbers and manufacturers should do their utmost to increase the popular appreciation of public utilities in general and upbuild confidence in the local central station.

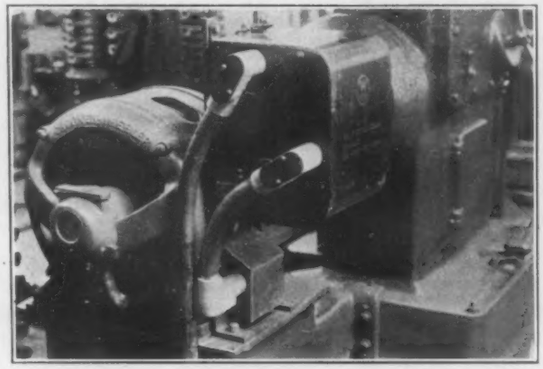
32. That association activities should be more closely coordinated to reduce the waste of duplication, and that the class thinking of the groups of electrical men represented by these associations should be more freely interchanged and harmonized.

33. That a careful study of present electrical-inspection functions be made to the end of revising or reshaping present inspection methods now sometimes charged as acting as a brake on progress in the art—and placing these responsibilities in the hands of men sympathetic with the aims of the electrical industry and appreciative of its coming development as a vast agency for the benefit of mankind.

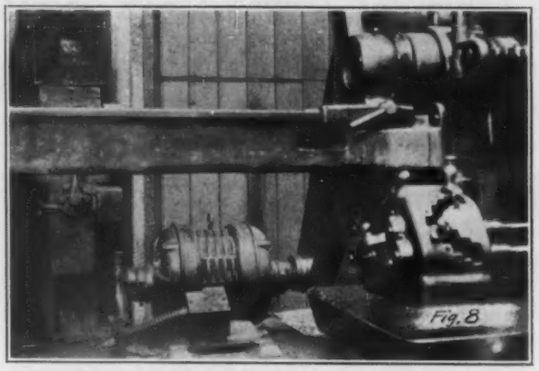
34. That it is the duty of every electrical man to help influence his acquaintances and the public to use electricity and electrical devices that lighten the labor of the home, office, shop and factory, and to organize from time to time model "Home Electric" demonstrations, electric shows, home lighting exhibits, commercial lighting exhibits, industrial lighting exhibits, better lighting campaigns, "electrical weeks" and similar educational influences.

# Factory Installation Combines Safety With Economy

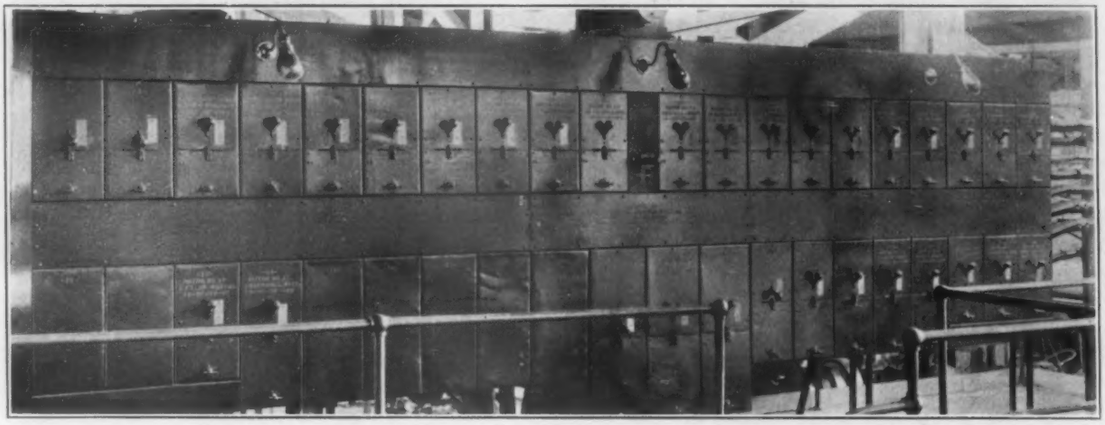
**One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress**



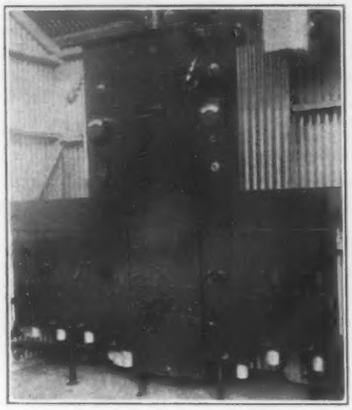
Special terminal boxes designed to fit each type of motor are a feature of the installation of the Bean Spray Pump Company of San Jose, California, which has been entirely reconstructed during the past year due to the plant's rapid growth.



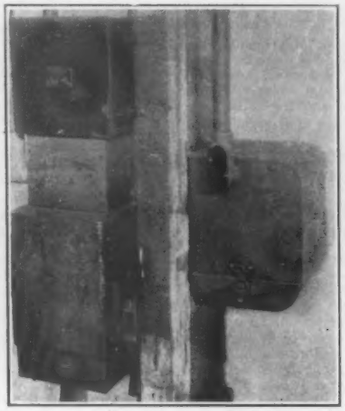

From the starters the circuits are carried in rigid flexible conduit to the motors, thereby protecting the wires and grounding the motors and starters to the entire system. This arrangement provides safety and flexibility with a minimum of apparatus.



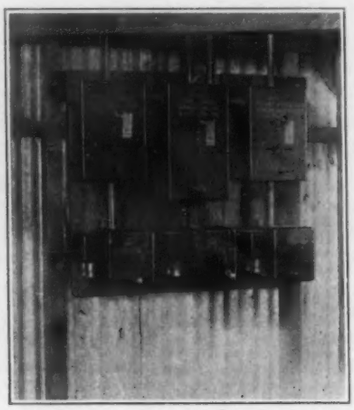
The machine shop switchboard above controls 29 motors and is the largest in the plant, being itself controlled by a 1,000-ampere main switch. This board is mounted on an elevated platform conveniently located near the center of distribution. It is built entirely of safety switches, arranged in two rows, with a set of buses and bus compartment for each row. The switches are grouped according to size; the largest being placed at the lower center.



Power enters the plant at 2,200 volts where it is transformed to 220 volts, metered and served to the main entrance on the central switch, shown above.



Auto-starters with self contained inverse-time-limit overload-relays and magnetic undervoltage release are used for the larger motors.



Motor controls are grouped at some points throughout the plant where a few small motors are operated within a short radius and a central control is desired.

# Self Improvement in Salesmanship

## A University Study Course for the Man who Meets the Public in Every Line of Business

### THE GOODS OFFERED FOR SALE

We have spoken of certain characteristics the salesman himself must possess, and among them were competentness, enthusiasm, and truthfulness. How can a salesman be enthusiastic in his work? How can he have that confidence in himself which alone creates the impression of both truthfulness and competence, if he does not know in every intimate detail the goods he is selling? Have you noticed how lovingly the engineer uses the pronoun "she" when he speaks of the machine which has become a living thing to him? The machine is his tool and his sweetheart, just as is the vessel to the sailor—just as the article he sells must be to the true salesman.

This was not necessary during the crazy buying during the war and for some time after it, just as it is not essential for employes in self-serve stores. But the latter can hardly be classed as salespeople, and the blessed times of "order-taking" have gone, probably for years, perhaps never to return. Being salespeople yourselves, you all know what we call a "sales-talk." And of course, you know just as well as I do that it is only your knowledge of the goods you sell which can furnish you with the proper material from which to build your sales-talks. Generalized knowledge of your goods will never do, one cannot sell things today with general and vague assertions. The buyer demands facts about the goods, and rather definite facts, too. Unless you happen to be on the sales force of one of those large organizations which require their salespeople to take a full training course in selling their product, you will have to go after this knowledge yourself. Remember several points in this connection. First, it is true that you should know as much about your goods as you can learn. But remember that telling a customer all you know about your goods is not salesmanship. Salesmanship consists in telling the customer that which he wants to know about your goods. Second, never make the mistake in believing that the average buyer, particularly if he is a layman, sees everything he looks at, for he never does. Take a leaf out of the book of those extremely successful and efficient merchandizers, the mail order houses; look over one of their catalogs, and observe how they describe each listed article in the greatest detail, so that after reading the description the buyer has no chance whatever to have missed any of the valuable points or characteristics of the article. Use the same method when selling, and do not take any chances. Third, the better you carry your knowledge of your own goods in your head, the better an effect you will produce on the buyer. It always irritates him to have the salesman hunt all over a catalog for prices or sizes.

#### The Market For Your Goods

People have a reason for buying a thing—they either need, or desire it—otherwise they would never buy it. It is up to you, if you want to sell successfully, to find out the various needs and desires which prompt or tempt people to buy the particular article you are selling. In the majority of cases, your prospect has not fully made up his mind to buy, and sometimes he has not even thought of buying at all. You must therefore be able to reinforce his desire, or to suggest it to him, and you can do so only if you know quite definitely how your product can and does satisfy human wants, needs and desires.

#### History of Your Product

Has it occurred to you that manufacturers and inventors are working all the time only on one problem; that all their efforts are directed only to one end; namely, to the satisfaction in an ever higher degree, of the multitudinous wants, of the endless desires of man? From the bronze beard-scraper of the time of Alexander the Great, to the clumsy iron razor of the middle ages, then to the unreliable early steel razors, to the high-grade razor blade of yesterday, to the first safety razors, and finally to the particular most modern, best perfected safety razor which you personally sell—this whole history of invention and perfection had but one aim—to satisfy the demand of man for a tool which would efficiently and comfortably remove hair from his face.

Hence to study in detail the history of the razor means to learn in detail the peculiarities of this desire of man. When you have done so you have learned how to make the prospective buyer understand quite clearly not only just what he wants when he looks for a razor, but also why your product is the one which will best satisfy his desire. To study the history of your goods means to learn the buying motives of the purchasers or users, and that is about as great an advantage to you as to know the hand your opponent holds in a game of cards.

#### Substitutes For Your Product

While studying the history of an article you will necessarily find out what similar articles have been used or invented for the purpose of satisfying the identical want or need of people. In studying the history of the electrical vacuum cleaner, for instance, you will learn all about the broom and the carpet sweeper; and you will also learn about the various types of vacuum cleaning — all-suction,

stationary-brush-and-suction, and mechanical-brush-and suction. Only by learning all there is to know about the substitutes which people may use for your own product can you expect to compete successfully against these substitutes.

It ought to be quite clear to every salesman who wants to sell that he should know quite definitely just what the thing he sells will do and what it will not do. How many double-bed sheets will a "six-sheet" electrical washing machine actually wash without inconvenience? In learning about the performance of your product study its practical limitations, and be careful not to stretch the meanings of the words you use.

**The Demand For Your Goods**

The demand of people for your product depends mainly on what the product can do for them in satisfying their wants, desires, or needs. And I have already indicated to you how essential it is for you to be fully acquainted with these. But there is another angle to this question which a salesman seldom stops to consider, often to his detriment. When people know what they want and have the means to pay for it, and on top of that are willing to pay for the thing they want, we call this an effective demand. When a buyer comes into your store to buy an electric range, and is ready to pay the amount such a range would cost him, you are up against a job of strictly competitive selling. Here is where your knowledge of just what people expect and appreciate in an electric range will make or break your sale, other conditions being favorable. But suppose the buyer would like to get an electric range but is not willing to pay the price of one, or else that he does not want to take the required amount out of his pocket and hand it over to you right then and there. Here is where your knowledge of buying motives may bring about a sale notwithstanding the initial handicap in the demand. It is up to you in this case to show the prospect so many additional paints of value in your product that in his estimation the satisfaction of his secondary wants, such as special comfort and extra conveniences, will overcome the initial handicap operating against your sale.

In many lines of salesmanship the source of best profit lies not in these relatively simple cases of recognized, conscious demand. It lies not in selling your range competitively with other ranges, but in selling primarily the idea of an electric range to people who have never felt the want of one, or the desire for one. We call this kind of demand "latent" demand. The possibility of a demand is there but it needs educational selling on your part to bring it out and to convert it into an effective demand. What do you think, for instance, of the electrical dealer who began selling washing machines to janitors of apartment houses of the two and three-room type, to be rented out by the janitor to the various tenants for a small fee each week? This dealer uncovered a latent demand, and enjoyed a free field for a long time before encountering belated competition, and by that time he was on the trail of another of these latent demands.

**The Prospect For Your Goods**

If you sit still in these days, and wait for the customer to hunt you up you run a good chance of landing in the poor-house. You have to go after your buyers, and go after them hard. But of course, running up and down city streets will not do at all in going after them. There are three effective ways for hunting up the elusive prospect in his lair; effective—provided you really go after him when you have discovered him.

Keep track of any direct leads which are given to you by your personal and business friends. Never leave your note book at home, because you may get such leads in the most unexpected places. Be eternally on the lookout for these direct leads—they are among your best sources of information. Remember carefully and all the time that every sale you make is at the same time a fertile source of possible direct leads of the most valuable kind. Do not hesitate to ask for such leads after a sale.

Mailing bureaus, city departments, club rosters, membership lists of various organizations—all these can be used in hunting for the potential buyer. Their ingenious use may prove very profitable to you.

But whether you use these or not, never forget to use the most important listing of prospects: the complete list of your own cash and credit customers. Here is where you capitalize heavily on the remembrance value of your own sales efforts, because every satisfied customer of yours is by that fact a half-sold prospective buyer of yours. I know that lists of credit customers are kept by every dealer in his accounts receivable ledger, but I have so rarely seen any attempt to keep a list of cash customers that I come reluctantly to the conclusion that the average dealer is really a kind of a rainbow chaser, neglecting that which is near and easy for that which is far and more difficult. If you have sold a man once and have satisfied him, why do you count against him the fact that he has paid cash on the spot? He will not, as a rule, refuse to give you his name and address for your list.

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## Six Years Experience With Convicts on Road Work in Northern California

In the six years since the first convict road camp was established in California, 1235 men have been sent from San Quentin prison to road construction camps located in remote districts in the northern part of the state. Out of this total 55 men escaped or attempted to escape and of these 35 men have been returned to the prison, and 20 are still at large. That is, 4.45 per cent of the convicts sent out on road work attempted to escape and 1.62 per cent were successful. A few months ago 2185 men were under commitment to the San Quentin prison and 252 of these, or 11.53 per cent, are assigned to one of the three road construction camps now operating in the northern part of the state.

J. A. Johnston, warden of the San Quentin prison, has expressed himself as being heartily in favor of the employment of prisoners on road work.

# Increasing Production in Industry

## Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production. Ideas and Suggestions by Practical Men.

### Preheating Boiler Feed Water Is Economical Practice

The heating of boiler feed water before it is fed to the boiler is an important factor in the economy of any steam generating plant.

In nearly all steam plants, even those running condensers, there is available for feed water heating purposes the exhaust from auxiliaries, which if not used will go to waste in the atmosphere. How many boiler users and engineers realize the vast amount of saving which might be effected with a small investment, an outlay for installation which will pay for itself over and over again?

Practically every steam plant under ordinary conditions has an abundant supply of exhaust steam available from feed pumps, etc., and there is hardly a more profitable use to which such exhaust can be put. This becomes evident when attention is called to the fact that the weight of exhaust steam required to raise the feed water temperature from 50 degrees to the boiling point, 212 degrees, varies from one-sixteenth to one-tenth that of the feed water.

In steam plants where the only units running noncondensing are the boiler feed pumps, which may not furnish sufficient quantities of "vapor fuel" to bring the feed water up to the desired temperature, it surely would be economy to run one or more vacuum or condenser pumps noncondensing, thereby increasing the quantity of this vapor fuel above that when operating these pumps condensing. In short, always provide a sufficient exhaust steam for preheating the boiler feed water, which is economy beyond any dispute.

Having stated the facts, we will now proceed to prove them. The advantages to be derived from an exhaust steam feed water heater and purifier may be divided in three general classes, to-wit:

1. Economy. Saving of fuel.
2. Purification. Precipitation of some of the scale forming matter both in suspension and in solution in the heater and before being fed to the boiler.
3. Protection to boilers. Water being fed to boilers at high temperatures causes less change in temperature in boiler shell and tubes, thereby reducing the range of fluctuation in pressure and thus less breathing action in the boiler shell and joints, and to a certain extent acts as a guard to keep oil from entering into the boiler by way of the feed water.

In plants operating without the use of a feed water heater, the highest ordinary temperature at which water will be delivered to boilers is that of the hot well; usually about 100 degrees Fahrenheit. This is far from the temperature to which water must be raised before the point of evaporation is reached, necessitating the employing of positive heat.

**THIS DEPARTMENT**

**will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.**

The product of the number of pounds of water required and the difference in temperature between the raw water and the water at 210 degrees, which is about as high as can be obtained in a heater of the ordinary type, gives approximately the number of British thermal units of heat necessary to perform this task. From the table of properties of saturated steam may be found the heat value of one pound of exhaust steam in British thermal units, and. dividing the number of British thermal units required, as determined above by the tabular value per pound, the number of pounds of steam necessary to heat the feed water is given.

Thus, if feed water supplied by means of a heater and at 210 degrees. Fahrenheit, were previously supplied from the mains, at 60 degrees. Fahrenheit, the relative cost of making steam will be at, say, 100 pounds gage pressure.

$$\frac{100\,(177.99 - 28.08)}{1188.77 - 28.08} = 12.91\% \text{ saving.}$$

Even when the exhaust is used in connection with a heating system, a heater may be inserted in the line under the same back pressure as is on the system, for the small amount of steam required to heat the feed water and the economy thus derived will more than compensate for the loss of the steam from the system.

Everyone realizes the importance and, in fact, the necessity of removing scale forming materials from the feed water before it enters the boilers. It is much better to catch these impurities upon the outside than to allow them to enter, and by their damaging presence decrease the steam generating power of the boilers. There is to be found more or less foreign matter, either in suspension or solution, in most waters, and methods should be used to remove these as completely as possible before the water will be fit to be used as boiler feed water.

It is a well known fact that the effect of cold water entering a boiler in operation is to set up strains and stresses which may cause leaks or fractures. By this preheating of the feed water to almost the point at which evaporation begins, there is a very little danger of such trouble from that source.

Knowing the ratio of evaporation to coal or oil consumed, and the calorific value of them, the saving thus effected will become apparent.

Without going into further detail, it may be quoted from authorities that the relative cost of using feed water at any one temperature, as compared with the use of water at any other temperature, is the reciprocal of their factors of evaporation.

F. A. PAGE,
Boiler Inspector.
California Industrial Accident Commission.

### Self Cooled Transformers Can Be Operated Under Emergencies

On account of self cooled transformers being designed on an ambient temperature of 40 deg. C., advantage of the full rating of the transformer may not be obtained where temperatures are above this point. Such a case happened in a substation of the Southern California Edison Company, so that artificial cooling was necessary. To meet the conditions, air ducts were installed around the base of the 5000-kva., single phase maximum rated, self cooled radiator type transformer, so arranged with openings placed between the radiators to direct the flow of air supplied by a motor driven blower.

With this method of artificial cooling, these maximum rated transformers will carry 25 per cent overload continuously with the same winding temperatures as at full load without artificial circulation of air.

The transformer is provided with a hot spot temperature indicator, an oil expansion tank and a high voltage tap changer, the latter operated by a hand wheel in a convenient position above the transformer cover.

The procedure proved to be inexpensive inasmuch as new transformers capable of handling this overload would have had to be installed in place of those of a lower rating. The cost of operating the blowers is nominal as only small motors are used.

# Welding Saves Traction Company Time and Money

## Synchronous Motors in San Francisco Substation Repaired During Off-peak Hours With No Interruption to Power Supply

Replacement or repair of electric railway substation equipment when auxiliary apparatus is not available to replace the unit which is placed out of commission during the period necessary for the repairs to be completed, was recently solved at the Bryant Street Substation of the Market Street Railways of San Francisco.

The major equipment consists of six 2150-hp. synchronous motors operating at 11,000 volts direct connected to 1500-kw. direct current generators. The motors are started from a compensator. The squirrel cage windings are under a very severe strain at starting due to heavy short circuits and vibration. This strain caused a loosening of the bars on the short circuit ring, causing them to burn off. There was danger at any moment of any one or all of the motors failing unless steps were taken to repair or replace them.

Welding the bars on the squirrel cage winding of one of a battery of synchronous motors in the Bryant Street Substation of the Market Street Railway in San Francisco during off-peak hours saved the traction company $900 as well as avoided an interruption of service.

Company engineers at first recommended that the rings be replaced but when it was taken into consideration that the machine on which the replacement was to be made would be out of commission four or five days, it was found that this was impractical. Load conditions are such that the entire battery of six generators are needed to supply current to the lines during the peak hours, that is from seven to nine o'clock in the morning, from eleven-thirty to one-thirty, and again from four-thirty until six-thirty in the evening.

It was decided to remove the field spools from one motor at a time, sending them to an outside shop to be welded. This also proved impractical as but three spools could be removed at a time.

The work was finally performed by constructing plates of sheet iron and asbestos to insulate the coils from the heating, at the same time arranging a blower to supply a blast of cold air through the coils while the work was in progress. The work was performed by R. J. Strecker of the Peerless Welding Company.

The actual welding was done during off-peak hours. The stator was moved forward by jacking, allowing the squirrel cage winding to project two inches. Four to six coils were welded an hour, each coil having four bars. The stator frame was moved in both directions to allow welding the bars at both ends.

Each of the five motors on which the work was done in this fashion was out of operation but four hours, two hours in the morning between load periods and two hours in the afternoon. Approximately twenty hours was required to complete the work on the five motors.

The cost to the company for the entire job of welding on the five motors was $100, or $20 per motor. Engineers estimated that the replacement cost of the worn parts would have been $200 per motor, or $1000. This money saving does not take into consideration the fact that the company's street car service would have been considerably impaired had any one of the units been forced out of operation while the replacement was being made.

According to J. E. Beckman, chief operator for the traction company, welding of the worn parts has improved the operation of the motors more than replacement would have done. Contact is better as a result of the weld than if new parts had been installed and riveted. The motors also start more quickly and with less danger of short circuiting. Engineers of the traction company are highly pleased with the results of the job.

## Use of Timber Preservative in Mines Is Economical

Throughout nearly all the metal mining districts of the West, the consumption and cost of mine timber has materially increased in the past decade. Likewise the more durable varieties of timber are becoming scarcer and the source more remote from points of consumption, consequently in many localities the less durable varieties must now be used.

In proximity to the important mining centers of Butte, Montana, and of Coeur d'Alene, Idaho, the accessible supply of red fir is largely exhausted. As a result the more plentiful but less durable varieties—yellow and lodge pole pine, tamarack, with a subordinate amount of spruce and white fir (balsam)—are being extensively used. The timber cost in two of the leading mining districts in Montana and Idaho has more than doubled in the past 15 years.

It is obvious that one of the rapidly increasing items of expense in mining operations is the cost of timber, to say nothing of the labor cost of installation. Therefore, any practical means that may be employed to prolong the life of mine timber will greatly reduce mining costs, and effect important economies in operation.

Mine timbers are destroyed by four principal agents—decay, insects, fire, and mechanical abrasion. In general, more than 50 per cent of the timber used in the mines is destroyed by decay and insect attack, but perhaps not to exceed 15 per cent of the total is subject to replacement, that is, where the working place will be kept open longer than the natural life of the timber.

Timber conservation may be accomplished in part by the better selection, preparation and storage of timber intended for mine consumption, but the most effective means is by treating the timber, to prevent decay, with some standard preservative before it is placed in the mine.

It is believed that the artificial preservation of mine timber offers an attractive field in which important economies may be realized, and that the time is opportune for promoting timber preservation in the mining industry.

The explanation of this is that mining timber in most localities, until the last few years, has been plentiful and comparatively cheap. As a result no inducement was offered to practice economy in its use, furthermore, mine operators in general have not been well informed concerning preservatives, treatment methods and costs, and the benefits to be derived from the use of treated timber.

The Bureau of Mines, in cooperation with the United States Forest Service, has only recently undertaken a systematic investigation of the decay of mine timbers, and its causes and prevention. The bureau's observations to date have led to the conclusion that not only important savings in the cost of operation may be realized by the use of treated timber, but also that the prevention of mine timber decay will remove one of the principal sources of heat and vitiation of mine air, which in turn has an important bearing on the problem of mine ventilation.

# Western Dealer, Jobber and Agent

Business building suggestions for the store — Distribution and warehousing methods — Advertising and sales promotion ideas

## Sale Lake Electragist Improves Store With Decoration

The Model Electric Company's store at Salt Lake City is an example of the progressive type of establishment which is so rapidly replacing the one room in which the electragist formerly attempted to function. Fred C. Wolters, the manager, made an extensive trip through California last summer, spending considerable time in San Francisco, for the purpose of gathering suggestions and ideas concerning electrical store arrangements. He has put many of these ideas into practice, with the result that he has a store with an individuality that is most pleasing.

The backs of the show windows are paneled with 6 x 6 inch glass panels, which keep out the dust, coal smoke, etc., and also allow plenty of daylight to enter the front of the store, and also permit the passerby to view the entire store from the sidewalk. Each window is newly decorated at least once a week.

The store has four departments: the main showroom and salesroom, a fixture room for the better class of fixtures, the office (a separate room), and the basement, where fixtures are manufactured and repair work done.

One of the features of the interior plan of the store is the color scheme, which Mr. Wolters says is largely responsible for the steadily increasing sales. The walls have a dainty blue tint, while the ceiling is a light cream. All the woodwork is enameled white, with baby-blue trimmings.

The floor is hardwood, with inlaid diamond panels.

It will be noted that the showcases are not crowded with appliances, but individual effects are applied wherever possible.

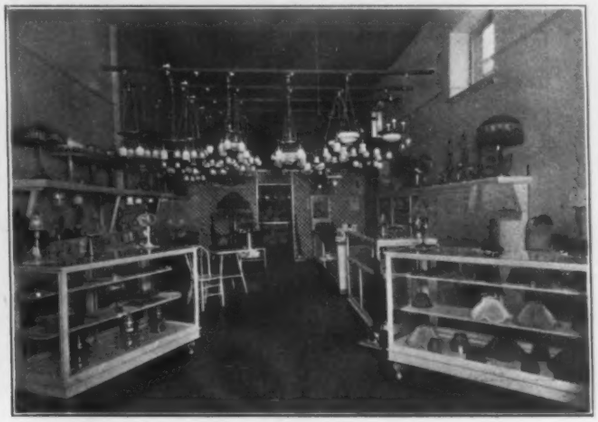
## A Set of Primary Rules for Good Window Displays

### A Primer for the Electrical Contractor-Dealer to Be Remembered When Decorating the Windows of His Establishment

A good window display is half a merchant's stock in trade. It is your window that attracts the casual purchaser and brings him to your store. There are rules and rules for window displays. The following primer can be memorized by the contractor-dealer and the electric appliance dealer with the knowledge that it contains all of the elements. The remainder rests with his ingenuity and originality.

1. Keep your windows clean. Have them washed frequently. If your own employes haven't time, get outside help. It will pay.
2. Don't crowd your window.
3. Avoid the other extreme. Too little in a big window will cause the merchandise to be "lost."
4. Card holders are useful. They'll keep price cards from falling over on their faces.
5. Make your display attractive to the eye—and the purse—but don't make it so "pretty" the merchandise is forgotten in admiration of the "trimmings."
6. Make your store front reflect you. It is the exterior which most people see. Impressions are made by exteriors.
7. Put the emphasis on the goods, not on the decorations.
8. Use art only to create a desire to buy the goods displayed.
9. Be sure your window lighting is the best obtainable.
10. Have the backing of your window high enough to shut off the view of the store interior.
11. Use a dark color in the background when displaying light colored goods, and vice versa. Get contrast.
12. To express coolness in a window use gray, light green or light blue for the color scheme.
13. To show warmth use reds, yellows, oranges—warm colors.
14. Dust out the window space frequently.
15. Never allow soiled or flyspecked cards or merchandise to remain on display.
16. To help the eye to travel quickly from a card to the object displayed, connect the two with white tape or ribbon. An arrow will have the same effect.
17. Invest a little money in stands on which to better display your merchandise. It will pay.
18. Empty cigar boxes make good "building blocks" to erect most any size or shape foundation for a display.
19. Crepe paper, bunting and cheese cloth are inexpensive coverings and draperies.
20. Make your display fit the season.
21. Get ideas from merchants in other lines of business.
22. Plan your displays ahead—days and even weeks ahead.
23. Get all material ready for the new arrangement before the old display is taken out.
24. Keep a "window note book." Jot down in it ideas you see which you may use later.

The store of the Model Electric Company in Salt Lake City had a fine location, good windows and everything in its favor. Fred Wolters, the manager, recently made a visit to the principal cities of the Pacific Coast to get ideas to improve it.

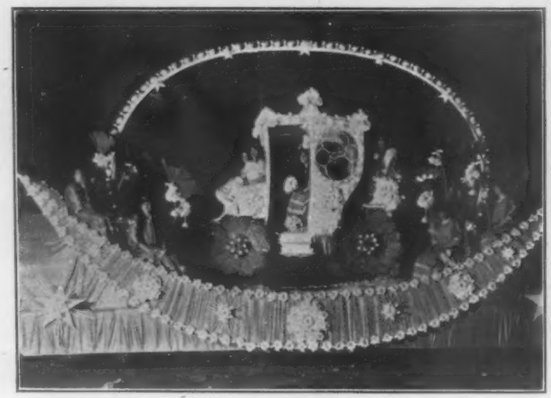


The interior of the store is both pleasing and imposing since the ideas were carried out. Effective coloring and decorations, careful layout of departments and the most effective manner of displaying his wares, have won the store more trade.

# The Electrical Industry and Parades and Festivals

## A Pictorial Representation of How the Men in the Electrical Industry in the West Have Utilized Electricity in Adding to the Beauty of Colorful Parades

During a recent annual convention in Los Angeles electricity played a prominent part in one of the big street parades. Long lines of delegates carried two-colored parasols, inside which was a cluster of small Mazda lamps. Current was supplied from cables carried in the hand connected in turn with motor generator sets carried on motor trucks at intervals in the parade.



One of the colorful floats in a recent night parade during an annual carnival in Southern California. Thousands of electric lights were used. The float was carried on a street car truck.

Any man in the electrical industry would be pleased to have this float represent his company. Two tons of roses were used in its preparation. A Portland company used it recently.

This enterprising Portland contractor-dealer advertised his wares to good advantage with this float in a recent parade in conjunction with a manufacturer's show and exposition.

This is an example of how the electragist can aid the community in successfully carrying out the decoration scheme for a carnival. One designed this well lighted triumphal arch.

# The Sales Letter as a Business Getting Medium

## The Results Secured by the Denver Gas and Electric Light Co. Illustrate What the Electragist Can Do

By JOHN T. BARTLETT
Boulder, Colo.

Is it harder to get business in 1922 than in previous years? Doubtless so, for competition is keener. Can it be secured in the case of such commodities as electrical fixtures, appliances and service? It surely can—if the ground is carefully studied and the sales plan cleverly carried out.

"If all people are interested in curtailing expenditures," some one asks, "how can one expect to sell them wiring which they previously have gone without?" The explanation of the fact that people actually can be sold is, partly, that there are many possible customers to sell on whom no serious effort has ever been made. It is partly also that there are many householders whose incomes have not been seriously decreased. And finally, capitalizing the prevailing thrifty mood of the public, there are such particular classes as the one reached by this successful sales letter, used by the Denver Gas and Electric Light Company. The letter follows:

"A government report calls our attention to an unnoticed waste in the following statement:

"WASTING LIGHT

"'A lighting expert says that about $200,000,000 worth of light is wasted every year in this country through failure to keep windows, globes, reflectors and other light sources free from dust and dirt.

"'The lighting bill for the nation is about $500,000,000 and if this expert is right, we are wasting two-fifths of this.'

"We have in stock ready for demonstration and installation a 100% lighting fixture and an equally efficient window lighting unit that will eliminate every wasting cause mentioned above.

"STOP AND THINK

"It is our intention to call on you in the near future. Won't you please designate a convenient time on the enclosed card?

"Sincerely yours,
"W. E. McCOURT,
"Representative."

This letter was produced in two colors. The "Wasting Light" quotation and "Stop and Think" were printed in red. The balance of the letter was in blue in harmony with the letterhead.

This letter, together with the other three which were recently described on these pages were on the letterhead of the Denver Gas and Electric Light Company. They were all personally signed, however, in each case by the sales representative into whose territory they went. The personal note was emphasized by using the intimate, "Dear Mrs. ——" instead of the common "Dear Madam." While this question is open to argument, the psychological effect of the greeting argues in favor of the warmer salutation.

Making this personal argument stronger still, the company in a recent sales letter did not use letterhead paper, but a simple sheet and simple envelope. The color was cream; the size of the envelope was one which is commonly used for social correspondence. This letter, which drew well, was addressed in handwriting, and its whole conception was such that the prospect receiving it in her mail had none of those unfavorable reactions to "advertising matter" often immediately aroused.

Whatever the electrical man sets out to sell by letter, he should take pains that the list he uses, to the extent practical is a list of known prospects. In selling wiring, for instance, it certainly is more simple to circularize only those homes which do not have it. In selling fixtures to present light users, an old district naturally contains a far greater proportion of live prospects than a new district. More actual sales are often secured with a small but choice list, than with a bulky list to which no thought has been given.

In its letter the Denver Gas and Electric Light Company did not attempt to completely sell. The purpose of the letters is to carry the recipient along to the point where he will ask for a sales representative to call. In other words, only a part of the burden falls on the letter. It remains for the salesman to get the actual order.

## The Electrician's Share in the Labor Cost of a Home

The Division of Building and Housing of the Bureau of Standards has recently completed a table showing the relation the amount paid to each labor group bears to the total cost in the construction of a six-room house. The averages were constructed from reports gathered in a survey covering a large number of houses in all parts of the country. The results are rather startling, especially from the point of view of the contractor-dealer.

In the table which follows, the percentages are based on the labor cost alone:

| Trade | Frame House | Brick House |
|---|---|---|
| Carpenters | 49.6 | 32.2 |
| Bricklayers | 6.2 | 21.5 |
| Hod carriers | 2.2 | 6.7 |
| Plasterers | 7.9 | 8.8 |
| Plumbers | 8.7 | 7.6 |
| Electricians | 2.6 | 2.5 |
| Painters | 10.0 | 6.3 |
| Common laborers | 6.3 | 9.9 |
| All others | 6.5 | 4.5 |
| Total, | 100.0 | 100.0 |

It will be noted that the amount which falls to the electrician is, with the exception of the hod carrier, the smallest outlay for labor in the construction of a home. Moreover it will remain to be the smallest item until every member of the electrical industry adds his voice to the cry of "More electricity in the home." The amount which the electrician receives cannot be increased until more wiring goes into the home. This will not come about until the public demands it. There is much educational work to be done before this happy millenium arrives.

EFFECTIVE WINDOWS

The Schwartz Electric Company of San Francisco puts into practice all of the rules governing effective window displays, as the above reproduction shows. The one vacuum cleaner is displayed to greater advantage than if the window is cluttered up with four or five.

# Activities of the West

## A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

### New Mining Company in Utah

**Seven Million Dollar Company Organized to Take Over Existing Interests**

The formation and financing of one of the largest mining organizations in the state of Utah has just been completed. The new organization is the Park City Mining and Smelting Company, organized under the laws of Colorado, with an authorized capital of $7,500,000, divided into 1,500,000 shares of $5 each.

The corporate powers of the company include mining, milling and ore dressing, smelting and the construction and operation of power plants and transportation lines.

The officers of the company are: G. W. Lambourne, president, treasurer and managing director; Moylan C. Fox, vice-president; Oscar N. Friendly, manager; George S. Krueger, superintendent of mines; D. C. Murphy, secretary; W. A. Dunn, assistant secretary.

The directors are: Otto Luedeking of Cincinnati; Harry M. Stonemetz of Boston; Adolph G. E. Hanke of New York; D. N. Friendly of Park City; Moylan C. Fox, William M. Bradley and G. W. Lambourne of Salt Lake City.

Stock of the new company is in its treasury and will be issued as necessary, to acquire and develop mining properties for the corporation. The Daly-West Mining Company, of Park City, will be taken over by the Park City Mining and Smelting Company as soon as the details can be arranged. Stockholders of the Judge Mining and Smelting Company of Park City will, in the near future, be invited to transfer the property of that company to the new company upon an equitable basis. Other properties may be acquired subsequently under the corporate powers of the new company.

It is expected that the new company will be an important factor in the further development of the mining industry of the state of Utah.

### Seattle Will Call For Bids For $2,000,000 Pipe Line

The Seattle Board of Public Works has approved plans and specifications for Cedar River pipe line No. 3, to be built from Swan Lake to the Volunteer Park Reservoir. Bids for this improvement, which is estimated to cost $2,000,000, will be called for this month. The line will be approximately 17 miles long, and will be 64 inches in diameter throughout most of the length. Specifications call for steel riveted, lock bar, forged weld and electric welded steel pipe, and also for creosoted wood stave pipe. The Swan Lake water supply system when completed will cost $6,000,000, and will provide for a second reservoir on Capitol Hill. When pipe line No. 3 is constructed lines Nos. 1 and 2, now leading from the Cedar River watershed will be diverted into the lake, and a tunnel will be built from the lower end of the lake to the point where No. 3 line begins.

### Portland Seeks Money to Improve Columbia River Channel

Appropriations to the extent of $1,750,000 are being sought by the city of Portland from the Rivers and Harbors Committee of the House of Representatives for permanent improvements to the channel of the Columbia River. W. D. B. Dodson, general manager of the Portland Chamber of Commerce, and Colonel George H. Kelly of the Port of Portland Commission, recently appeared before the committee in Washington in behalf of the appropriation.

The United States Army Engineers have recommended a channel 500 feet wide and 30 feet deep at all stages of the river. The money will be used for the purpose of purchasing a new dredge and for building wing dams to prevent shoaling at various points in the river.

### Large Utah Mine Replaces Steam With Electrical Equipment

The Grand Central mine at Mammoth, Utah, is installing equipment for the electrical operation of its property, on an extensive scale. The power line from the Chief Consolidated mine at Eureka has been extended to the Grand Central, and transformers and other equipment are being placed in position.

The machinery, now being driven by steam, will be operated entirely by electricity. The Chief Consolidated Mining Company, which now controls this property, has equipped all of its properties with electrical machinery. The company is convinced that electricity is the most reliable and economical power that can be used at a mine, and that changing from steam to electricity, even though a relatively good steam plant is being replaced and the cost of replacement is high, is in the line of permanent improvement.

**Under the terms** of a new ordinance recently brought before the city council of Yakima, Wash., and which is being held over for final passage, electrical contractors of that city will be required to pay a $200 annual license fee. The former fee was $25. Besides the annual fee, inspection fees will be paid to the electrical inspector.

### Midway Plant to be Enlarged

**San Joaquin Light and Power Corporation to Install New Steam Plant Unit**

Within less than a year after the completion of a 17,000-horsepower unit in the Midway steam plant at Buttonwillow in Kern county, the San Joaquin Light and Power Corporation has announced that work will be started immediately on a second 20,000-horsepower unit to be completed by August 1st. The unit is necessary to take care of the peak load during the irrigation period.

The new unit will consist of a 20,000-horsepower Allis-Chalmers turbo-generator and will cost $1,750,000. The fuel to be used will be natural gas piped from the Elk Hills oil fields nine miles away. The gas will be carried in an 8-in. welded pipe under a pressure of 450 pounds per square inch.

The additional steam capacity required to drive the new machine will be generated by six 825-horsepower Connelly tubular boilers, making a total of fourteen high pressure boilers available for the two turbines. Water for these boilers and for the condensers is pumped from a battery of six wells, having a total capacity of 4,000 gallons per minute.

The power generated in this plant is available for use in the oil fields, where electricity for drilling and pumping is rapidly taking the place of gas and oil engines, and for the increasing agricultural load in Kern county, where 35,700 acres of rich farming land was brought under electric pump irrigation during the last two years.

The San Joaquin Company and the Southern California Edison Company recently requested the State Railroad Commission to approve a contract whereby the former agrees to furnish the Edison company 80,000,000 kilowatt-hours of electric energy between August 1, 1922 and June 1, 1923. The San Joaquin Light and Power Corporation will reserve the 12,500-kw. unit in the Midway steam plant for the exclusive use of fulfilling the contract. In the request the companies point out that power can be generated more cheaply at the Midway steam plant through the utilization of natural gas for fuel than it can in the steam plants of the Southern California Edison Company where fuel oil is used.

**In commemmoration** of its twenty-fifth anniversary, the Tokyo Electric Light Company donated to the city of Tokyo $500,000 for the construction of an electrical research laboratory and its maintenance.

## Federated Engineering Societies Study Reforestration

Indications that the Federated American Engineering Societies will take an active part in a campaign for the reforestration of partially devastated areas developed at a recent meeting of the executive committee of the organization when a motion was adopted appointing a committee to consider this matter.

Speaking of the general subject of forestration, which is of vital interest to the West in that the major portion of the nation's timber supply is located west of the Rocky Mountains, Mortimer Cooley, president of the federation, said:

"You will realize at once where lumber is necessary in engineering operations, there is even a more important consideration. You only have to look at China and some other countries to see what has been the effect of the destruction of the forests to those countries. Not only has a large amount of water power been wasted, which could have been utilized in developing the prosperity of the countries, but because the lumber has been removed from the hills and mountains, floods have followed and as a consequence, the lands have been ruined.

"We should bring to the attention of the people of the country an appreciation of what the preservation of these forests would do for the country at large. I cannot think of anything more vital to the interest of the country."

He further stated that the best authorities gave it as their estimate that at the rate that lumber is being consumed, not at an increased rate, that the lumber resources of this country will last only 60 years and that there is no uniform effort being made throughout the country towards preserving the forests or towards restoring them.

## Funds Raised for First Street Railway Payment in Seattle

The city of Seattle has succeeded in raising the $1,245,000 necessary to meet various items of bonded indebtedness which fell due on March 1 in connection with the purchase of the street railway system. Operation of the railway was such that during the latter part of 1921 there were insufficient funds on hand after the payment of operating expenses to raise the money necessary to pay the first installment of $833,000 on the $15,000,000 purchase price with $375,000 interest which fell due at the same time. In consequence the entire street railway department was placed on a warrant basis, with warrants bearing six per cent interest. Since December 24, when this system went into effect, there were issued $600,000 in warrants, which are now being redeemed.

**The division of water rights** of the California State Department of Public Works has announced that after March 1 its offices will be located at 912 Eighth Street, Sacramento. The offices were formerly located at 632 New Call Building, San Francisco.

**Owing to the unprecedented demand for copies of the February first annual issue of the Journal of Electricity and Western Industry the supply is exhausted. The circulation department will pay subscribers twenty-five cents for each copy sent to 531 Rialto Building, San Francisco. Copies must be in first-class condition.**

# Events in Washington of Interest to Western Men

### A Survey of Recent Developments in the Nation's Capital by Paul Wooton, Special Correspondent of the Journal of Electricity and Western Industry

While Muscle Shoals is a southeastern water power and the South will receive more of the direct benefits from its development than will any other section, yet the project has great national significance. In the first place its control is a national matter. The project can be leased or disposed of only as the Congress of the United States shall see fit. That is the principal reason why the consideration of its disposal, which is in progress before the Military Affairs Committee at the House of Representatives, is focusing more attention than the consideration of the treaties on the other side of the Capitol.

One of the points of greatest interest to the water-power industry was brought out by Major General Lansing H. Beach, the Chief of Engineers, when he declared there should be exceptions from the fifty-year limit on water power leases as laid down in the Water Power Act. Not only should powers of exceptional size receive special consideration, but in the case of many water powers, Gen. Beach believes more than fifty years is required to develop a market for enough of the power to make the project a paying one. The territory tributary to Muscle Shoals, Gen. Beach pointed out, is not thickly settled. Manufacturing is not highly developed and the length of time that would be required to develop a market for the power must receive careful consideration. He said it took twenty years to utilize all of the power that was made available at Niagara Falls, in spite of the fact that it is located in the heart of a great industrial section.

Interest in the whole matter has been heightened materially by the introduction of a bid by the Alabama Power Company. This practically assures the completion of the project. It is believed that Congress will be forced to accept either that offer, that of Henry Ford, or complete the dam and lease the finished project. It is very evident from sentiment within the committee that Mr. Ford's offer will have to be modified in some particulars before it will recommend further consideration on the part of Congress. While Congress will not be called upon for large initial appropriations in the case of the Alabama Power Company offer, it does not have the numerical support among the people as does the Ford offer, which not only holds out a promise of cheap fertilizer, but also of cheaper automobiles, tractors, and possibly cheaper aluminum.

As a result of the controversy over Muscle Shoals, the development of water power is receiving wide publicity and is having the effect of educating the public to its potential advantages.

### Dye Probe Begins

Under the guidance of Senator Shortridge, of California, the investigation of the dye situation was begun by the Senate Committee on February 20th. Other members of the committee conducting the investigation are Senator Ashurst, of Arizona, and Senator Sterling, of South Dakota. Senator King, of Utah, is leading the attack on the American dye interests which he claims constitute a monopoly which they seek to maintain by special legislation. Senator Frelinghuysen, of New Jersey, is taking a leading role in the defense of the domestic dye industry and in endeavoring to establish irregularities in the practices of American importers and the German dye interests. A long and detailed investigation, certain to be characterized by sensational charges and counter-charges, is in prospect.

### The Federal Power Commission

The matter of the depreciation regulation recently promulgated by the Federal Power Commission was the subject of discussion at an executive session of the Commission on February 20. Two months ago representatives of the electrical industry appeared before the Commission urging a liberalization of the depreciation requirements of the regulation. It is understood that the Commission itself is divided on this question. Secretary Fall, of the Interior Department, is said to feel that the regulation is so strict as to discourage the investment of money in water power. Secretary Wallace is said to be of the opinion that depreciation accounting by the Federal Power Commission must follow the system set up by the Interstate Commerce Commission, the Bureau of Internal Revenue, and other government departments. The decision is said to rest in the hands of Secretary Weeks who promises an early decision of the matter.

## Southern Sierras Company Uses Film to Spread Information

At the seventh annual convention of the officers and employes of the Southern Sierras Power Company and associated companies recently held at Riverside, California, a pre-eminent feature of the program was the showing of the motion picture, "Kilowatt the Conqueror," filmed by the power company for the purpose of showing in a comprehensive manner the essential properties which make up its system. These properties extend from Rush Creek in Mono county in the high Sierra, to Yuma, Arizona, a distance of some 539 miles, spanned by what is claimed to be the longest transmission line in the world. In conjunction with the pictures of each plant, views are flashed on the screen of the various industries in that vicinity which are supplied with power.

The film has been shown both in New York City and in Denver before bonding concerns. Several other western public utility organizations are using this method in presenting their cases before financial bodies. The Southern Sierras Power Company's film has been highly commended by publicity officials of the National Electric Light Association, who have stated that it is the best of its kind yet made.

# West Exceeds Nation in Water Power Resources

## U. S. Geological Survey Figures Show Western States Have Most Developed and Undeveloped Water Power

The West possesses seventy-two per cent of the potential water power of the United States, according to a survey recently completed by the U. S. Geological Survey. Based on the minimum amount of potential water power in this country, estimated from stream flow figures which do not take into consideration water storage, there is available in the eleven states west of the Rocky Mountains slightly more than 20,000,000 horsepower in undeveloped hydroelectric resources, the survey shows.

The survey also includes a survey of all water power plants of 100 horsepower and over in the country. There were in 1921 a total of 3116 such plants with an installed capacity of 7,852,948 horsepower. Of this total 79 per cent are public utility plants and the remainder manufacturing plants. New York still maintains its lead in the amount of developed water power with 1,291,857 horsepower. California is a close second with 1,149,099 horsepower while Washington is third with 454,356 horsepower and Montana fifth with 344,420 horsepower.

The number of plants, both public utility and manufacturing, and the installed capacities for the eleven states comprising the Western Empire follow:

| | No. | Capacity |
|---|---|---|
| Montana | 28 | 344,420 |
| Idaho | 45 | 224,368 |
| Wyoming | 9 | 7,560 |
| Colorado | 57 | 91,648 |
| New Mexico | 3 | 799 |
| Arizona | 8 | 38,760 |
| Utah | 64 | 106,096 |
| Nevada | 9 | 13,450 |
| Washington | 69 | 454,356 |
| Oregon | 74 | 185,215 |
| California | 134 | 1,149,099 |
| Total, | 500 | 2,615,771 |

The total shows that the West, with less than one-sixth of the water power plants of the nation, develops approximately one-third of the total power.

The following table, which shows the potential water power in each of the states, as well as the percentage of the total undeveloped water power of the nation, namely 27,943,000 horsepower, it is interesting to note that the state of Washington possesses the greatest power resources of any state in the Union. The table follows:

| | Horsepower | Per Cent |
|---|---|---|
| Montana | 2,749,000 | 9.84 |
| Idaho | 2,362,000 | 8.45 |
| Wyoming | 773,000 | 2.76 |
| Colorado | 842,000 | 3.01 |
| New Mexico | 160,000 | .57 |
| Arizona | 893,000 | 3.20 |
| Utah | 743,000 | 2.66 |
| Nevada | 172,000 | .62 |
| Washington | 4,932,000 | 17.65 |
| Oregon | 3,148,000 | 11.27 |
| California | 3,424,000 | 12.25 |
| Total, | 20,198,000 | 72.28 |

The figures in the above table are for absolute minimum. In general practice water power plants are installed which utilize the stream flow far in excess of this minimum.

## Coal Production in Washington Drops 36 Per Cent in 1921

According to figures issued from the office of State Mine Inspector at Olympia, coal produced in the state of Washington in 1921 amounted to 2,422,106 tons, having a value at the mine of $10,260,805. The coal output for 1921 was 1,334,775 tons below that of 1920, when the total for the year was 3,756,-881 tons, the decrease being nearly 36 per cent. This decrease was due almost entirely to the closing down of 90 per cent of the mines in the state on March 15, re-opening the latter part of August, on account of the wage controversy between the miners and operators.

The average number of employes in the coal mining industry in the state for 1921 was 4,575, these employes working an average of 157 days each.

Kittitas county had the largest number of mine employes, with a total of 1,934, while King county's total was 1,360.

## Utah Commission Has Control of Municipal Utilities

The attorney general of Utah has advised the city attorney of Logan, Utah, in response to a query as to the public utilities commission's jurisdiction over municipally-owned electric plants, that a municipal corporation operating its own electric plant is a public utility subject to the jurisdiction of the state commission.

The city attorney's letter referred to the constitutional provision enabling cities to incur indebtedness for the purpose of constructing such plants, to which the attorney general replied:

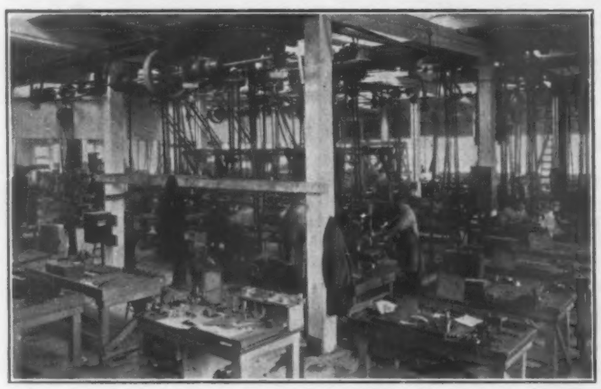
"Your observation that bondholders might object to the regulatian of such utilities by the commission because it interferes with the city's control of such utilities, does not appeal to us. We do not see why bondholders should be concerned as to who regulates the rate charged for light or power furnished for the reason that it is not with the profits that the bonds are paid, but with taxes levied by such municipality for the very purpose of paying the interest as it accrues and the bonds themselves when they become due."

City officials of Logan recently met with the public utilities commission of Utah in regard to some of the problems which are confronting them in the operation of the municipal electric light plant at Logan. The municipal plant has depreciated to a considerable extent, and it has become necessary to provide some means of rehabilitating same.

The question of increased rates was discussed, together with other matters in connection with the operation of the plant. The matter has not come before the commission for final hearing, and therefore no definite action was taken.

The city officials are considering the question of installing meters.

**The Union Pacific Railroad** will spend $100,000 for the improvement of its yards and facilities in Denver, according to a statement made by Carl R. Gray, president of the system, during a recent visit to the Intermountain city. The money will be largely spent for increased trackage. President Gray discounted any statements that reduced freight rates in line with the agitation which has been going on in the Intermountain district will be forthcoming owing to high fuel and labor costs.



SEATTLE COMPANY COMPLETES NEW FACTORY

**The Kilbourne and Clark Manufacturing Company, pioneer western manufacturers of radio equipment, recently sold its Seattle factory to the Westinghouse Electric and Manufacturing Company. Since that time the company has completed the above factory building in the city's industrial district. The building houses the commercial and engineering staffs, and the raw material, stock, machine shop, electrical winding, electroplating, assembly and tool departments as well as the engineering laboratory. The company's activities now cover commercial and popular radio equipment, electrical specialties, small transformers and motor generator sets. The company has several contracts for the manufacture of radio equipment for the Army and Navy departments. The view of the interior shows the arrangement of the machinery.**

## Los Angeles Railway Investigates Trackless Trolley Cars

An extensive investigation to establish the relative merits of the trackless trolley and the storage battery bus for some contemplated extensions of the Los Angeles railway system, is being conducted by Phil Harris, chief engineer of the company. According to the statement of George H. Kuhrts, general manager, the adoption of one or the other form of transportation for the Griffith Park extension and the contemplated Western Avenue service, is dependent upon some favorable action of the state commission in connection with the present pending application for a small increase in fares in the Los Angeles service.

The property owners and the Western Avenue Business Men's Association are said to be very anxious for these extensions of railway service from Third to Fifty-fourth streets on Western Avenue, as this section has undergone a remarkable growth in the last two years and must have some form of adequate transportation.

There has been some talk of organizing a gasoline bus system, among the interested real estate and business men, patterned after the Fifth Avenue, New York, buses. A vehicle for demonstration purposes has been making trial runs in the last few days.

## Idaho Power Company to Rebuild Large Boise Substation

In order to obtain increased efficiency in and centralization of power furnished by the Idaho Power Company to local consumers in Boise, a consolidation is being made of the substation facilities of the company in Boise at one plant instead of at the two stations now in use. The Seventeenth Street station is the one which will be used, and this is being remodeled and considerable equipment is being installed. The work will cost in the neighborhood of $55,000. It is expected by the latter part of spring or early summer that this station will be taking care of the complete service of the company in Boise. The completion of the work at the Seventeenth Street plant will mean the closing of the station located at Fourteenth and Grove streets as far as substation use is concerned, and that building will be used for storage and warehouse purposes.

## Measure Proposed to Sell Power to Municipalities

Surplus power developed by federal irrigation projects would be sold to municipalities and private interests under the terms of a bill which has been introduced into the House by Representative Carl Hayden of Arizona. The measure proposes an amendment to the Reclamation Act whereby power developed in conjunction with irrigation projects would be leased for periods not to exceed ten years by the Secretary of the Interior. Preference in the leasing and selling of power would be given to municipalities. Exception is made to the ten-year period in the cases of some of the larger projects in Texas, New Mexico and Arizona where power would be sold for fifty-year periods provided approval is given by the various water users' associations.

# Stockton Company Announces Vast Hydro Project

### Western States Gas and Electric Company to Develop 100,000 Hp. on American River Near Placerville, California

A license for the development of a four-stage hydroelectric project on the South Fork of the American River near Placerville, California, has been granted by the Federal Power Commission to the El Dorado Power Company, a subsidiary of the Western States Gas and Electric Company of Stockton. The completed project will develop 100,000 horsepower and will cost approximately $100,000,000.

Plans for financing the company have already been undertaken. The Western States Gas and Electric Company has applied to the California State Railroad Commission for permission to issue $5,000,000 in 6 per cent bonds which will mature in twenty-five years.

The first step in the development calls for the erection of a power plant above Placerville in which there will be two 10,000-kilowatt hydroelectric units. The plant will later be brought up to its full capacity of 80,000 kw.

The project as proposed utilizes an existing canal, 25 miles in length, known as the El Dorado Ditch, which will divert water from American River, a short distance below its confluence with Silver Fork. The canal will be enlarged from a capacity of 40 cubic feet per second to 350 cubic feet per second. From the canal the water will be conducted through a 3-mile conduit to the penstocks which supply the turbines to be located in a power house on the American River about one mile below the mouth of Silver Creek. The turbines will operate under a head of 1,900 feet. The company plans to provide for an ultimate installation of 100,000 horsepower to be developed in four stages.

The project includes six storage reservoirs on the headwaters of American River, with an ultimate capacity of 90,000 acre-feet. Three of the reservoirs, to the capacity already constructed, are included in the license for Project No. 78, which was recently issued to the Western States Gas and Electric Co. The El Dorado Power Co. will acquire all water and property rights involved in these reservoirs, and it is intended to amend the present license later to include them.

The public hearings on this project brought out data showing that the greatest economic use for irrigation purposes alone demanded that as much as possible of the water on the upper American River be used for power. By generating electric energy in the mountains and transmitting it to the highly productive agricultural area in the vicinity of Stockton, about 3 acres per horsepower can be irrigated by electric pumping. If the water necessary to produce the electric energy were to be diverted to irrigation uses in the upper American drainage, the equivalent usefulness of the water would be 1 acre per horsepower. Furthermore, but little of the water diverted to irrigation use on the upper American River drainage could again be productively used, whereas the same water, if used to generate electricity, can be used again for the same purpose at a plant lower down on the stream.

According to Samuel Kahn, general manager of the company, the work which will be undertaken this spring and which will be completed by January 1, 1924, includes the following:

1—Construction of new power house in canyon of South Fork of American River, above Placerville and near Camino. Two units, each developing 10,000 kilowatts or a total of more than 26,000 horsepower, are to be installed. Eventually other units will be added, bringing the total capacity of the plant to 80,000 horsepower.

2—Enlarging and lining of 25 miles of the El Dorado ditch from the forebay above new power house to point on American River near Kyburz, just below mouth of Silver Creek, which carries the water of Twin (Caples) and Silver lakes into the American.

3—Construction of penstocks. The water wheels in the power house will operate under a 1900-ft. drop which will make this one of the high-head plants of the country.

4—Enlargement of Twin Lakes to create 16,000 acre-feet of storage.

5—Construction of diversion dam in the South Fork of the American River at head of El Dorado ditch, just below Kyburz.

6—Construction of double transmission line to connect new plant with present transmission system.

## Constitutionality of King Tax Bill Is Attacked

The constitutionality of the King Tax Bill, sometimes known as the "corporation tax bill," passed by the California State Legislature last year, has been attacked in a suit filed in Sacramento by the Los Angeles and Salt Lake Railroad Company, for the recovery of $127,738.40 for taxes paid under protest. This is the first of several suits to be filed against the measure, according to attorneys who are representing the railroad company. Practically every large corporation in the state paid taxes this year under protest.

The suit sets forth five points upon which it bases its allegation as to the unconstitutionality of the measure and supplements these with reasons in support of the contentions.

The following five points are set forth in the complaint as a basis for the attack upon the act:

First—That the enactment of the legislature approved March 5, 1921, denies plaintiff the equal protection of the law, contrary to the provisions of the constitutions of the state of California and the United States.

Second—That it deprives the company of its property without due process of law.

Third—That it results in the taxation of the operative properties of the company within California not in proportion to their value, but greatly in excess thereof, contrary to section one, article thirteen, of the state constitution.

Fourth—That it results in an interference with, the placing of an undue burden upon, the obstruction of, and the regulation by the state, of commerce, foreign and interstate.

Fifth—That no equalization of the company's taxes or assessments upon its operative property as compared with taxes and assessments upon other property within California or upon operative property of other railroad companies in the state has been made, nor opportunity for such equalization afforded.

**Contracts for the construction** of the building which will house the exhibits of the United States at the Brazilian exposition, which is to be held at Rio de Janeiro next September, have been let by the government.

## Books and Bulletins

### A Life of George Westinghouse

By HENRY G. PROUT, C.E., A.M., LL.D. 6½ by 9 inches. 375 pages. Nine illustrations. Charles Scribner's Sons, New York.

For many years it has been advocated that the Society of Mechanical Engineers ought to publish the lives of some of its great men. The Life of George Westinghouse marks the second volume of a series which promises to do this.

Lord Kelvin once said: "George Westinghouse is in character and achievement one of the great men of our time." This compilation of the facts of his active life as recounted by his closest friends and associates—he left no written record of his life—verifies Lord Kelvin's statement. In the manufacture of power and in the development of transportation George Westinghouse stands out as one of the apostles of democracy. Few men have led a more active life. Few men have more actively participated in the business, engineering, financial and commercial affairs of as many large companies located in a score of countries thousands of miles apart.

The book is the logical presentation of the activities of a man whose work was as varied as that of the great engineer. It would be difficult to handle the matter chronologically, for there were times when he was engaged in a number of enterprises equally momentous. So the author has taken each of the many topics around which his life was woven and has treated them separately.

Nor has the volume suffered from this manner of presentation. Any volume setting down the life of a man who rises from comparative obscurity to a pre-eminent place among the engineers and industrial leaders of America would be interesting reading. As a fascinating record of such a life; as an intimate disclosure of many of the heretofore unrevealed episodes of his career; as an inspiring analysis of the engineer's part in the advancement of modern civilization, this book must be recognized as an unusual contribution to the literature of the age.

**The Allis-Chalmers Manufacturing Company,** Milwaukee, has recently issued Bulletin No. 1119, describing high pressure condensing steam turbine and generator units. The bulletin contains a very complete description of the units manufactured by the company which is profusely illustrated with diagrams and illustrations of actual installations. It also includes a set of general instructions on turbine operation as well as recommendations on adjustments.

**Moody's Investors Service,** 35 Nassau Street, New York City, announces the publication of a new Rating Book or Analysis of Public Utilities. The book combines the features of a manual on public utilities with those of a rating book, performing the same function in respect to the investment standing of securities as the credit agency books do on credits. Descriptions of properties, full information regarding earnings, finances, officers and directors of each company are given.

## Cooperative Campaign to Sponsor Course in Salesmanship

Classes in retail salesmanship for the purpose of increasing the sales ability and sales knowledge of clerks in the electrical industry will be instituted by the California Electrical Cooperative Campaign in San Francisco on March 6. The first series of classes will extend over a period of three months and will be held primarily for clerks only. It will be limited to twenty-five. The classes will be held every Monday night during March, April and May in the assembly hall of the Pacific Building in San Francisco.

Mrs. H. W. Fleming, a graduate of Smith College and the Prince School of Education in Store Service, and the holder of a degree of master of education from Harvard University, will be in charge of the classes.

Approximately one hour of the class will be given over to intensive instruction in the principles underlying the retail selling of electrical merchandise and store service. The remaining time of each session will be devoted to discussion by recognized authorities of the electrical industry of subjects intimately connected with the work of electrical retailers.

It is planned to perpetuate the classes with a view of ultimately encouraging the proprietors themselves to enroll.

## Sespe Light and Power Company Announces Development Plans

Plans incident to the financing and construction of the Sespe Light and Power Company's irrigation and water power projects in Ventura county, California, have been completed following a contract entered into by the power company and the Shattuck Construction Company, which offers to supply funds for the completion of the project. The project contemplates a series of dams and reservoirs in the Sespe and Piru rivers.

The first unit to be constructed is known as the Hammel reservoir and power plant and the Bradfield reservoir and plant. The former will store 1,000 acre-feet of water and will generate a maximum of 7000 horsepower. The Bradfield plant will consist of two 9500-horsepower units with an auxiliary unit of 4500-horsepower capacity.

The power to be developed will be distributed largely to the farmers in Ventura county for irrigation purposes. It is said that a contract has also been entered into with the Southern California Edison Company for the sale of any surplus power which is developed.

**The gaining importance** of the copra crushing business in the Northwest is demonstrated in the report of the Portland Vegetable Oil Mills Company for the first two months of its operation. The plant opened December 21, 1921, and the first shipment was made during the first week of January. During that month a total of 27 carloads of oil was sent out and orders were booked for 100 cars during February, most of which were filled. Future delivery orders amount to more than $500,000 in addition to the by-products of the plant, which will be sold locally for stock feed and will yield returns in excess of $50,000.

## Utah Manufacturers Oppose New Industrial Lighting Code

Opposition to the adoption at the present time of a proposed industrial lighting code by the industrial commission of Utah, has developed to a considerable extent among a number of the members of the Utah Manufacturers' Association.

At a meeting held on February 13th, at the state capitol at Salt Lake City, which was presided over by G. R. Yearsley, chief factory inspector for the Utah Industrial Commission, and which was attended by a committee from the Utah Manufacturers' Association, it was decided that no agreement could be reached as to terms of the proposed measure, but that the protest of the members of the association should be presented to the commission some time in the near future.

The arguments presented by the manufacturers were based largely on the claim that considerable expense would be incurred to them at a time when expense is hard to bear.

Mr. Yearsley introduced reports, in support of the code, showing that experience with the lighting code elsewhere had proved that the establishment of proper lighting conditions was of economic benefit to the industry on account of increased production and elimination of much waste.

It is expected that no definite action in regard to the matter will be taken at the present time.

## Rights of Power or Irrigation Interests Questioned

Controversies over the relative rights of power and irrigation interests in the use of the water of the Yuba River have developed in a series of hearings recently held in San Francisco before F. H. Fowler, district engineer of the Federal Forestry Service and H. A. Kluegel, chief of the water rights division of the State Department of Public Works. The Yuba Development Company and the Excelsior Water and Power Company are both seeking water rights on the Yuba River while farmers of the Nevada Irrigation District contend that they have prior rights to the water. The Yuba Development Company contemplates a series of dams and reservoir for the primary purpose of irrigation, the entire project to cost $27,000,000. The Excelsior Water and Power Company proposes to construct three reservoirs, seven miles of tunnels and six power plants. The power would be sold to mining companies in this section of the state. The project contemplates the expenditure of approximately $25,000,000. Both companies are said to be backed by eastern capital.

No decision was reached in the matter by either the state or the federal authorities before whom the hearings were held.

**Freezing of the** city water pipes and mains at Yakima, Wash., will be remedied by injecting superheated steam into the reservoirs, according to officials of the Pacific Power and Light Company, which furnishes the city with water. A boiler has been erected at the edge of the reservoir and will be operated night and day.

# Meetings of Interest to Western Men

## New Mexico Electrical Interests Hold Annual Convention

Members of the New Mexico Electrical Association held their annual convention at Albuquerque on February 13 and 14 with fifty delegates and visitors attending. The meeting was one of the most successful in the history of the organization both in the matter of the program and of attendance.

The program follows:

Monday morning:
Address of welcome by James N. Gladding. Response by D. E. Bent of Tucumcari. President's annual address, Arthur Prager of Albuquerque. Reports of secretary and treasurer. Committee reports. Address, "The Goal and Value of Budgeting," by O. A. Weller, president of the Rocky Mountain division, N. E. L. A., of Denver. Discussion.

Monday afternoon:
"Some Central Station Losses," by Prof. C. E. Carey of the state university. "Lighting the Home," by George O. Hodgson of Denver. "General Station Matters," by W. P. Southard of Trinidad, Colo. Two reels of especial interest to electrical men were then shown at the Crystal theater.

Tuesday morning:
"Electrical Merchandising," by J. J. Cooper of Denver. "Humanizing Public Utilities," by George E. Lewis of Denver. "Some Modern Ideas of Electricity," by Prof. R. W. Goddard of the state college.

Tuesday afternoon:
"Relation of Wireless to Central Stations," by L. D. O'Connell of the Westinghouse Electric and Manufacturing Company, El Paso. "Central Station Advertising," Mr. Schram of Roswell. General discussion of the relation of New Mexico utilities to the Rocky Mountain division of the National Electric Light Association. Informal talks. Election of officers. General discussion.

## Denver Cooperative League Holds Successful Theater Party

The Denver Electrical Cooperative League extended its activities to the social side when on February 20 it held a theater party at the Empress Theater in Denver.

The double purpose of the entertainment was to get the industry as represented by all the electrical men, their families, employes and friends, together as part of the regular monthly program of the League and to thoroughly entertain the audience with the regular vaudeville bill and special high-class acts from the industry.

R. H. Edwards, prominent Denver electragist and singer of note appeared, also Walter Tripp of the Hendrie and Bolthoff Mfg. Co. in specialty numbers. "Back of the Button," the N. E. L. A. moving picture film, and other "movies" of electrical industry were shown.

The ulterior purpose in giving the show was to secure additional funds to advertise the Electrical Home which will be opened in Denver early in April.

Clarence Keeler, Alex Hibbard and J. W. Ryall, the League entertainment committee, were responsible for the success of the party.

## Salt Lake Engineers Organize Employment Bureau

The Salt Lake chapter of the American Association of Engineers has opened headquarters in the Deseret Bank building, with an officer of the local chapter in charge.

An important part of the work of the chapter now is the operation of the employment bureau, which is conducted without charge to either employer or employe. The chapter officials have listed most of the engineers of the state and are enabled to give accurate data on the qualifications of each, and to tell where he is to be found. In this way the bureau supplies the needs of employers of engineers promptly and fills positions with men who fit into them.

In addition to the employment feature of the chapter the committees of the association are working on the details for the national convention to be held at Salt Lake June 5, 6 and 7. These committees already have their work well in hand, and promise that the convention will be one worth while to visitors and also to the people of Salt Lake. The program of entertainment will include trips to interesting parts of the state.

**The San Francisco section** of the American Association of Engineers has appointed a committee to investigate the details of the proposed California Water and Power Act which will appear on the November ballot. The committee is composed of the following engineers: J. J. Rosedale, Industrial Accident Commission, E. E. Carpenter, consulting engineer, George Mattis, Oakland city engineer, Charles H. Lee, consulting engineer and former head of the water rights division of the State Department of Public Works, and Donald M. Baker of the Water Commission.

### COMING EVENTS

**MONTANA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS**
Annual Convention—Butte—March 6-7, 1922

**PACIFIC COAST ELECTRICAL ASSOCIATION, AFFILIATED WITH N. E. L. A.**
Annual Meeting—Los Angeles, May 31-June 2, 1922

**AMERICAN ELECTROCHEMICAL SOCIETY**
Spring Meeting—Baltimore—April 27-29, 1922

**OREGON ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS**
Mid-winter Convention—Corvallis—March 2 and 3, 1922

## Los Angeles and San Francisco Organizations Elect

Both the San Francisco Electrical Development League and the Los Angeles Electric Club have elected officers for the new year. K. E. Van Kuran, district manager of the Westinghouse Electric and Manufacturing Company, will be in charge of the destinies of the Los Angeles club, while R. A. Balzari, manager of the Industrial division of the San Francisco office of the Westinghouse company, will head the San Francisco organization.

Other officers of the Los Angeles club follow:

Vice-president, W. L. Frost, Southern California Edison Company; vice-president, H. L. Miller, H. L. Miller Company; vice-president, D. W. Pontius, Pacific Electric Railway Company; secretary and treasurer, C. E. Listenwalter, Listenwalter & Gough; sergeant-at-arms, J. E. MacDonald, Joint Pole Committee. Executive committee—P. H. Booth, Edison Electric Appliance Company; H. W. Allen, Graham-Reynolds Electric Company; E. R. Northmore, Los Angeles Gas and Electric Corporation; Frank Van Vranken, Los Angeles Railway Company; B. G. Wright, Southern California Telephone Company; H. B. Woodill, Woodill-Hulse Electric Company; Harry Harper (ex officio), Western Electric Company.

The remaining members of the slate which heads the San Francisco Development League follow:

Louis F. Leurey, electrical engineer, first vice-president; W. B. Sawyer, United States Steel Products Company, second vice-president; J. W. Mahoney, General Electric Company, secretary-treasurer; directors, Warren H. McBryde, California and Hawaiian Sugar Refining Corporation, Frank W. Smith, Great Western Power Company, Carl B. Kenney, NePage McKenny Company, and Grover A. Anderson, Electric Appliance Company.

## Idaho Irrigationists Will Form One Large Water District

Formation of one great irrigation district to comprise all districts except those with their own irrigation systems was decided on at a recent meeting of representatives of irrigation companies and districts in southern Idaho. This decision was taken through the adoption of resolutions offered at a banquet to 150 delegates.

It is believed that the organization of one large district will be the first step in a campaign which will result in assuring the undertaking and completion of the American Falls project by the federal government.

Preparatory to uniting of the separate districts a thorough campaign of education will be prosecuted under the direction of the Idaho Reclamation Association. Manager Guy Flenner is making plans to send representatives of the association into all districts.

**At a recent meeting** of the various related interests of the building industry in Seattle, including electrical jobbers and dealers, plumbing and heating contractors, architects and engineers, lumber manufacturers, and financiers, a permanent organization to be known as the Washington Association for Building and Construction, was formed. D. R. Huntington, architect, was elected chairman, and W. Hutton, secretary, to serve until election of officers. J. J. Agutter, electrical contractor, R. G. Emerson of the Northwest Electrical Service League, and Sam Hunter of Sam Hunter Co., Inc., building materials, were named to serve on a committee to formulate a constitution and by-laws.

# Personals

**Captain John D. Fredericks,** the newly elected president of the Los Angeles Chamber of Commerce, is a natural born and reared enthusiast. The thirty-one years of California life have served to intensify the broad vision and love of accomplishment that the student, athlete, and scholar of Washington and Jefferson College had worked for and thrived in, during college days in the late '80's. Captain Fredericks was born in the same county in Pennsylvania that admits to fame because of this same university just mentioned.

J. D. FREDERICKS

Following graduation he came to Southern California and while teaching school he took up the study of law. In this he has continued to date, with the exception of time spent in the service of his government during the Spanish-American War, acting as adjutant in the 7th California Volunteers. Many acts of his term of office pay tribute to the highest of ideals in the conduct of the judicial branches of the county, state, and national government. Ardent lover and believer in the value of all educational activity; a man possessing the characteristics of natural leadership; with the physique and stamina to work unceasingly for accomplishment, he should make an enviable record as leader in this, one of the largest Chambers of Commerce in the United States.

**W. M. Shepherd,** assistant to the manager of the California Oregon Power Company, is a recent Portland visitor. The activities of the California Oregon Power Company have been moved from San Francisco to Medford, Oregon, where this company is extending its big transmission lines up into the Willamette Valley, as previously announced in the columns of Journal of Electricity and Western Industry. It is believed that the activities of Mr. Shepherd and his company will do much for the opening up of new agricultural and industrial development of southern Oregon.

**Dr. Elwood Mead,** member of the faculty of the University of California and head of the California Land Settlement Board, will go to Hawaii in the near future to advise with the Hawaiian Homes Commission in the movement which has been instituted to rehabilitate the rapidly vanishing Hawaiian race.

**Lars Jorgensen,** a consulting engineer of San Francisco, has returned from a trip of several months' duration in European centers. Mr. Jorgensen has been in close touch with the engineering situation in Czecho Slovakia, where he went as a consulting engineer for the Czecho Slovakian government to make a report on the rehabilitation of that section of Europe.

**W. L. Goodwin,** assistant to the president of the Society for Electrical Development, Inc., with headquarters in New York City, who is well known to members of the electrical industry throughout the West, is beginning to show powerful results for good in his reorganization work in the Society's activities. Mr. Goodwin has placed in the employ of the Society a number of experts in the gathering of statistical information, particularly relating to the uses of electricity in the home, which cannot fail to bring helpful results to the industry as a whole.

**John A. Britton,** vice-president and general manager of the Pacific Gas and Electric Company, has been asked to deliver a lecture before Princeton University on April 4th covering the utility situation and development in the West. This is to be the conclusion of a notable series of appearances of public utility men before Princeton University, among them being Samuel Insull, Frank Edgar and W. B. McCall, all nationally known figures in the electrical industry.

**Fred A. Noetzli,** chief engineer, Beckman & Linden Engineering Corporation with headquarters in San Francisco, has returned from an absence of four months, spent largely in European rehabilitation centers where he particularly studied the situation in Austria.

**E. E. Browne,** president of the California Association of Electrical Contractors and Dealers, is busily engaged in appointing his committee and in formulating ideas as to how the new trade mark and slogan for the upbuilding of the California Association may be best put into practice. The Sacramento meeting was one of the most successful in the history of the Association, and it is believed that activities for the coming year will measure well up to those of former years.

**Robert Sibley,** as vice-president of the American Society of Mechanical Engineers and vice-president of the American Institute of Electrical Engineers, was able to secure during December the promise of the two great national organizations to hold their annual convention at Portland, Oregon, during the great exposition year of 1925, and these two conventions are now listed on the docket, and it is believed that international interest will be aroused in the forthcoming engineering conventions at Portland during the convention year.

**N. Abrams,** manager of the Western Agencies, San Francisco, is now on an extended trip throughout the East, where he will visit the various manufacturers whose products are distributed in the West by his organization.

**J. Malcolm Muir,** vice-president and general manager of the McGraw-Hill Company, Inc., of New York City, is a recent San Francisco visitor. Mr. Muir comes to the Pacific Coast to personally investigate the great construction activity in engineering achievement that is under way in the West at the present time, and is enthused over the possibilities of this section as one of the great future commercial and industrial centers of the world.

**F. E. Johnson,** sales engineer of the M. W. Kellogg Company, is a recent San Francisco visitor, having returned from an extended trip to Japan and Formosa. Like W. M. White, chief hydraulic engineer of the Allis-Chalmers Company, Mr. Johnson has recently had an exciting trip into the head hunter country while in the wilds of Formosa, and has many interesting tales to tell of engineering development and the difficulties involved in the Far East in putting over these activities.

**George W. Evans,** Seattle consulting mining engineer, has been chosen by the Union Pacific Coal Company, operators of twenty-two mines in Wyoming, to make an official examination of its properties. Methods of mining now in vogue will be investigated and suggestions for improvements will be made by Mr. Evans.

**I. W. Alexander,** for several years in charge of the securities and advertising departments of the San Joaquin Light and Power Corporation, has resigned from the company to become resident manager of the newly established Fresno branch office of the firm of Blythe, Witter and Company, a California investment house. Mr. Alexander joined the publicity and advertising departments of the power company eight years ago. He was formerly a newspaper man. Two years ago, when the

I. W. ALEXANDER

company undertook an extended securities campaign, he was placed in charge of this activity and since that time has done much toward forwarding the idea of customer ownership of public utility securities in California. While his loss to the electrical industry will be keenly felt, he is to be congratulated on his new appointment, which recognizes the confidence placed in him by thousands of investors in public utility securities in the San Joaquin valley.

**Max Loewenthal,** president of the Globe Commercial Company of San Francisco, manufacturers' representatives, and secretary of the Pacific Radio Trades Association, has gone to Washington, D. C., to represent the coast organization in the government's radio conference. The meeting has been called to discuss the problems of wireless congestion, which have become excessive due to the thousands of amateurs in the field.

**F. F. McCammon,** in charge of power sales for the Denver Gas and Electric Light Company, is receiving congratulations for having secured the largest single industrial load yet to be added to the central station lines. The Beatrice Creamery of Denver will furnish the load, which will be in excess of 1000 horsepower.

**Arlington M. Smith, Evan Fisher, Henry R. Haines** and **Henry Fisher, Jr.,** all formerly connected with the Southern California Edison Company on the Big Creek Development, have formed the Western Engineering Company, practicing and supervising engineers with offices at 220 Brower Building, Bakersfield, for the purpose of conducting surveys, reports and investigations on mining, irrigation and hydroelectric projects.

**O. L. Mackell,** of the Denver Gas and Electric Light Company, has been appointed a central station representative on the advisory committee of the Denver Electrical Cooperative League.

**Charles Wiggin,** of Dunham Carrigan and Hayden, with headquarters at San Francisco, has been elected president of the Pacific Coast Division of the National Electrical Supply Jobbers' Association. This news will be received by men of the electrical industry with gratification in that Mr. Wiggin has for years been recognized as one of the outstanding men who has through faithfulness and consistency in purpose contributed a substantial share in the upbuilding of this well known western activity. It is believed that the industry generally will give Mr. Wiggin the whole-hearted support he deserves in putting over the best year ever in the activities of the Pacific Coast Jobbers' Association. The informal view herewith shows "Charlie" in that winning way of his, watching the "little birdie" come out of the camera.

CHARLES WIGGIN

**Rey E. Chatfield,** secretary-manager of the Electrical Service League of British Columbia, is a recent San Francisco visitor, having come to California on a combined business and pleasure trip. Mr. Chatfield conferred with leaders in the electrical industry in this state on the forwarding of the cooperative movement and reports that rapid strides are being made in the Northwest in this field.

**Whitney L. Boise,** of the Portland Chamber of Commerce, represented Oregon at the annual meeting of the Water Power League of America which met in New York recently. The entire question of power development in the United States was discussed at this conference, with particular reference to the formation of super-power zones. Mr. Whitney also represented Oregon at Washington as one of the delegates from the Western States Reclamation Association appearing in behalf of the McNary-Smith reclamation bill.

**Paul B. McKee,** general manager of the California Oregon Power Company, has recently returned from a visit of several weeks in business centers of the East.

**L. T. Merwin,** general superintendent of the Northwestern Electric Company of Portland, is a recent San Francisco visitor, where he conferred with California central station company officials and attended to other matters of business in conjunction with the activities of his company.

**P. D. Kline,** vice-president and general manager of the Wisconsin-Minnesota Light and Power Company of Eau Claire, Wisconsin, is a recent San Francisco visitor. While in the West, Mr. Kline inspected many of the larger hydroelectric projects and commented upon the rapid strides which have been made in this section of the country in the matter of high tension transmission.

**J. S. Thompson,** president and general manager of the Pacific Electric Manufacturing Company of San Francisco, has left for an extended visit to the East where he will investigate high tension equipment similar to that manufactured and distributed in the West by his company.

**Willis T. Batcheller,** consulting engineer, who for the past ten years has been connected with the City of Seattle as a hydroelectric engineer, has just completed a report for the state of Washington on the Columbia river pumping and power project. This project contemplates the irrigation of some two million acres of arid land in the central part of the state by means of water pumped from the Columbia river into a coulee which will form the main supply canal. About a million and a half horsepower will be required for pumping purposes and additional amounts of commercial power up to one million horsepower can be economically developed on the proposed site.

**E. L. Bowler,** formerly district manager at Tulare for the Southern California Edison Company, has been transferred to Los Angeles to become chief clerk to the vice-president. As a result of this change, **L. S. Tudor** becomes district manager at Lancaster and **J. N. Haskin** moves from Lancaster to Tulare to take the position made vacant by Mr. Bowler's transfer.

**Stuart Mannell,** manager of A. G. de Sherbinin and Company, Seattle, importers, exporters and engineers, has recently been elected president of the Seattle Engineers' Club to succeed J. Thomas Dovey. While not a graduate engineer, Mr. Mannell has been identified with engineering, mining and construction projects since coming to the Northwest from Ontario in 1897. He spent eleven years in the Yukon district of Alaska in mining and construction work and for the past thirteen years has been one of the most active figures in engineering circles in Seattle. For the past seven years he has participated in the affairs of the Engineers' Club and preceding his election to the presidency, served as chairman of the board of trustees of the organization.

STUART MANNELL

## Obituary

**William J. Barker,** vice-president and general manager of the Denver Gas and Electric Light Company, one of the foremost figures in the electrical industry in the Intermountain district, died of pneumonia on February 15. One of the pioneers in the central station field in the West, Mr. Barker came to the United States from England in 1870. Ten years later he came to Denver as chief engineer for the Colorado Electric Company, the company which obtained the first lighting franchise in that city. He has been identified with the activities of the city's central station since that time. Indicative of his activity in the civic and commercial affairs of the city is the fact that he was a member of the Denver Civic and Commercial Association, the Denver Athletic Club, the Denver Club, the Denver Motor Club, the Rocky Mountain Country Club and the Denver Press Club. He was also a member of various Masonic organizations and the Elks. He was one of the mainsprings of the Denver Electrical Cooperative League and was head of the corporation which is building the first electrical home in that city. His loss will be keenly felt, not only by the members of the electrical industry with whom he was closely associated, but also by the thousands in Denver whom he has aided by his benevolence.

**The Bowie Switch Company,** San Francisco, manufacturers of high tension circuit breakers, switches, cutouts and transmission line equipment, has just issued Bulletin No. 14 describing a new type of expulsion-tube fuse for protecting transformers and transmission lines.

**The Rutenber Electric Company,** Marion, Ind., manufacturers of the "Marion" line of electric heating and cooking appliances, announces several improvements on its Model 30 hot plate which include cast aluminum frame and legs in place of cast iron. The weight of the two unit plate is reduced ten pounds.

**The Wodack Electric Tool Corporation,** Chicago, manufacturers of drills, hammers and grinders, has perfected a new portable drill and grinder, designed to be used in plants or shops where there is insufficient demand for a separate drill or grinder. The total weight of the instrument is 18 pounds, the motor has two speeds and develops ½ hp.

**Cote Bros. Manufacturing Corporation,** Chicago, has secured the approval of the National Board of Fire Underwriters for the new refillable plug type fuses which the company has perfected.

**The Westinghouse Electric and Manufacturing Company** has issued special publication No. 1644, "A Review of Electric Railway Problems of 1921." This publication is profusely illustrated as an aid to the discussion on the various problems of electric railway operation which it contains.

**The Cutler-Hammer Manufacturing Company,** Milwaukee, has added to its line of canopy switches a very shallow type of rotary switch less than one inch in diameter. It is designed for use in shallow wall brackets. The rating is one-half ampere, 125 volts.

**The Killark Electric Manufacturing Company,** St. Louis, manufacturers of fuses and conduit fittings, has issued a regular sheet which has attached to it a condensed catalog sheet giving prices, carton quantities, standard package quantities and catalog numbers. All the information formerly included on twenty-four sheets has been placed on one.

**Harry Arthur,** of the Enterprise Electric Co., had a booth at the Industrial Exposition recently held in Denver. **A. R. Woolley** of the Edison Electric Appliance Co. helped him display the Hotpoint line.

**The Emerson Electric Manufacturing Company,** St. Louis, Mo., is placing on the market for 1922 a new type of alternating current fan motor. It will be known as the Emerson Junior, and owing to certain refinements such as the elimination of speed control, swivel, etc., will be offered at popular prices. Bulletins No. 4021 and 4022 describe the 1922 products of this company.

**The Mountain States Machinery Company** of Denver was represented at the New Mexico Electric Light Association convention at Albuquerque by Walter Wells.

**Albert Sechrist,** head of the Albert Sechrist Manufacturing Company of Denver, has just returned to that city after an extended eastern tour in the interest of the electric pressure cooker patented and manufactured by his company.

## Manufacturer, Dealer, and Jobber Activities

**The Superior Machine Company,** De Kalb, Ill., owner of the cooling swinging wringer patents and manufacturers of the Superior oscillating type washing machines, has recently been purchased by the **Hurley Machine Company** of Chicago. The Superior Company will continue to manufacture and merchandise its products as formerly.

**The Federal Porcelain Company,** Carey, Ohio, has just issued Catalog No. 2 covering the standard line of electrical porcelain manufactured by it. In addition to fully covering the company's products the catalog is a ready reference book for the purchaser of porcelain. The catalog will be distributed upon request.

**The P. A. Geier Company** of Cleveland has announced an extensive advertising program for Royal vacuum cleaners for 1922. Besides more than the usual amount of space in the business and trade papers, various popular magazines will carry direct to the purchasing housewife the message of the time-saving, labor-saving electric cleaner.

**Day and Zimmerman, Inc.,** engineers of New York, Philadelphia and Chicago, have issued an artistic booklet on the Front Street Plant of the Erie Lighting Company which was designed by them and constructed under their supervision. Results of actual performance at this station add to the value of the booklet.

**The consolidation** of the **Richardson-Phenix Company** of Milwaukee with **S. F. Bowser and Company, Inc.,** Fort Wayne, Ind., has resulted in no change in the Pacific Coast representatives of the two companies. Theo F. Dredge will continue as Pacific Coast representative for the Richardson-Phenix division of the Bowser company, while the interests of the latter concern will be handled in the West by E. M. Savercool as western manager, and E. C. Marsh as assistant manager. The district offices for both concerns are located in San Francisco.

**The Refrigo Corporation,** Milwaukee, announces the perfection of a small automatic refrigeration unit which can be used in conjunction with any type of household refrigerator. The device is electrically operated and may be placed on top of the refrigerator or in the basement as the owner sees fit. Included in the innovations which the company claims for the new device are its freedom from leaks and the quality of the thermostat which operates the ammonia pump. A bulletin covering the device has been issued by the manufacturers.

**A. L. Myers** of Myers and Swartz, San Francisco manufacturers' representatives, has recently returned from an extended trip to eastern manufacturing centers.

**Cote Bros. Manufacturing Corporation,** Chicago, makers of simplicity refillable fuses, have established branch offices at New York, Philadelphia, Boston, Cleveland, San Francisco, Tampa and Denver during the past month.

**H. G. Weeks,** president of the Weeks Manufacturing Company, Hamilton, Ohio, manufacturers of electric ranges and appliances, is visiting Pacific Coast cities investigating the market for the products of his company.

**Dwight P. Robinson and Company, Inc.,** with which is consolidated Westinghouse, Church, Kerr and Company, engineers and constructors, has moved its Los Angeles office to 1111 Hollingsworth Building. The office is in charge of C. C. Thomas, western representative.

**W. C. Ross** and **D. H. Potter** have taken over the business of the Brownell Electric Company at Baker, Ore. The new store has been incorporated under the name of the Baker Electric Supply Company.

**The Altorfer Bros. Company,** Peoria, Ill., manufacturers of A B C washing machines, announces the development of a full-size oscillating type washer to retail at popular prices, $105 west of the Rocky Mountains.

**The Delta-Star Electric Company,** Chicago, Ill., is distributing Bulletin No. 32, describing a complete line of outdoor high tension switching and protective equipment of the unit-type design. A copy will be sent upon request.

**The Arrow Electric Company,** Hartford, Conn., has prepared a fuse box chart for distribution among contractor-dealers to be placed in the fuse box of newly wired homes to aid the householder in locating the fuses for the various rooms of the house. The charts contain a space for the contractor-dealer's name and address. They may be obtained in lots of fifty or less from Arrow jobbers and in larger quantities, containing any printed matter the dealer designates, from the Arrow headquarters at a nominal charge.

**SUSPICIOUS**

**If you were a prohibition officer and you saw a man holding a package shaped like the one which is reposing in the hand of Arthur E. Rowe, sales manager for Garnett Young and Company, San Francisco, would you search his hip pocket? We are not naturally suspicious but we wonder if "Art" is just going to, or coming from a meeting of the San Francisco Electrical Development League, where he is one of the "moving spirits."**

# Business Outlook in Western Market Centers

## Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

### SAN FRANCISCO

Indications are that during the succeeding months, there should be an ample supply of credit for agricultural, industrial, and commercial purposes at moderate interest rates.

Building activities continue to increase in San Francisco, although for the most part they are still confined to office and business structures, thus leaving the housing shortage acute, with rents high. Skilled building mechanics are in demand and the United States Department of Labor reports that payrolls in San Francisco increased 14.8 per cent in January. In the wholesale trade, the volume of sales in most lines is reported in excess of sales for January, 1921; groceries did not come up in value to sales a year ago by about 15 per cent; but plumbing supplies and building materials report an increase both in volume and value of sales. Most retail lines also show an increased volume over January, 1921, of from 30 to 40 per cent—with values approximately the same. Collections are good.

Shipping has not picked up to any great extent, but there is a good deal of repair work going on. Export business with the Orient is fair.

### LOS ANGELES

Building departments report February permits for half-month of February exceed the entire month of last year. During the first fourteen days of the month 1475 permits were issued with estimated valuation of $4,785,365. There is a perceptible increase in the permits issued for business structures.

Money to loan for building mortages is more plentiful than at any time during the past year. Banks and loan departments of insurance companies are taking active steps to supply the demand.

The full economic value of the rainfall to date is becoming apparent as the ground-water table is found to be several feet higher than at any time in recent years. This will be reflected in lower costs for pumping during the coming season and when combined with the reduced requirements for irrigation water will help to compensate for low prices and any citrus crop shortage due to the freezing weather in January. Vegetable crops have not recovered from the damage of last month and the available local supply is of inferior quality and at a somewhat higher price than usual.

Retail sales of implements, small tools, hardware lines and electrical goods were much better in January and February than for the corresponding period last year. A definite upward trend for average sales, in volume, is reported by many representative dealers.

### PORTLAND

General business is quiet although it is better than at this time last year. Jobbers find business equal to that of last year with prospects much better than those of a year ago. Retail trade has been affected by rather adverse weather conditions, but the volume is fair. Exports for January totaled $4,759,460 in value, which is equal to the first month of last year. The building movement is active and prospects for greater activity in the spring are very good. Permits in January aggregated $1,080,460 in value, which compares with $646,560 in January of last year. Although the lumber industry appears on the road to a complete revival, business so far this year has not been up to expectations. Production for the week ending February 11 was 11 per cent below normal. Electrical jobbers and contractor-dealers report business quite satisfactory, although contracting is not as good as it will be when the spring building activity begins.

Wheat prices have risen steadily, but not in line with eastern advances. Exports of wheat in the past month were 2,448,906 bushels and the flour exports were 95,445 barrels.

### SEATTLE

More than 57,000 men are now working in the mills and logging camps of Washington and Oregon, and according to present indications this number will be greatly augmented before the middle of March. Sawmills of western Washington and Oregon continue a strong and steady production, cutting 87 per cent of their normal full-time capacity.

Building operations on the scale heretofore predicted, have started to materialize, and had it not been for inclement weather, the spring program would be nicely started. As it is, there is a considerable amount of new building, including an encouraging number of new residences.

Merchants report a very gratifying volume of business for the months of January and February, and express the firm belief that the spring will show a definite return to normal buying on the part of the public. Prices on nearly all lines of merchandise have shown a decrease, which has been the prime means of stimulating buying. Unemployment conditions are showing further improvement.

### SALT LAKE CITY

Business is still "marking time" in the intermountain section, and there is no material change. Severe winter weather has retarded building operations, but considerable work is planned along this line as soon as spring opens up. Bankers report that there is little call for money at present. One very favorable condition is the increase in wool prices, which it is believed will result in easier money throughout this section, and materially increase the buying power of the wool growers. Retailers in all lines are stocking up for spring business and are looking forward to much better conditions than have existed for the past year. Electrical goods are not moving very rapidly, but this situation also is expected to improve materially with the coming of spring. An upward trend in produce prices has created a feeling of encouragement among the farmers. The unemployment situation still remains a serious problem, with, however, some slight improvement. The mining situation is practically unchanged, with no definite date set for the re-opening of the Bingham copper mines, although it is felt that this is not very far off. The Utah Steel Corporation, at Midvale, Utah, has re-employed approximately 100 men during the past thirty days, with indications that more will be added in the near future. Collections are slightly easier, although no appreciable change is noted.

### DENVER

Indications as to the immediate outlook here are shown by the statements of Governor O. P. Shoup. "The people are talking better times and getting ready for increased business. So far as Colorado is concerned we have not felt the depression that was experienced in the East. Our industries are so diversified that unemployment has been comparatively small. These industries are receiving increased orders and the whole business situation is clearing up. Federal loans arranged for by a thoughtful and sympathetic administration in Washington have been helpful to our cattlemen. Agricultural conditions, I think, are showing gradual certain improvement."

The Denver Real Estate Exchange has launched an extensive advertising campaign, pointing to a population of 500,000 by 1930.

Voluntary buying in nearly all lines is still low. The movement of all types of electrical equipment and merchandise is slow. With no cessation in building activities, however, there is every reason to believe that the demand will increase.

# Construction News and Industrial Developments

## Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and All Business Men Opportunities for New Business

### THE PACIFIC CENTRAL DISTRICT

SAN FRANCISCO, CAL.—The Mineral Metal and By-Products Co., American National Bank Building, has purchased 1372 acres of tidelands off the San Mateo shore where it plans to erect a plant.

FRESNO, CAL.—The Raisin Growers' Association has announced its plans for the erection of a fireproof office building at the intersection of Inyo and L Streets. The cost is estimated at $150,000.

FRESNO, CAL.—Mrs. Blaine Rogers and her brother J. Patterson have bought the Forsyth property on the corner of Tulare and J Streets and will build an 8-story office building. The estimate calls for $600,000.

NAPA, CAL.—Approximately $100,000 will be spent on improvements and new buildings at the Napa State Hospital. The work will be done under the supervision of the Engineering Department at Sacramento.

FRESNO, CAL.—The San Joaquin Light & Power Corporation will start construction about April 1st on an extensive power development project requiring seven years to complete and involving an expenditure of over $25,000,000.

SAN FRANCISCO, CAL.—J. C. Brickell is erecting a two-story building on Sutter Street between Sansome and Montgomery Streets, to be occupied by Coldwell, Cornwall & Banker, real estate dealers, who have taken a ten-year lease.

FRESNO, CAL.—According to the announcement of architect Eugene Mathewson the new buiiding for the Brix estate will be 6-story, Class A, office and stores, and will cost $300,000. Bids will be called for at an early date as the plans are ready.

SAN FRANCISCO, CAL.—The Petri Italian-American Cigar Co. is planning the erection of a four-story factory building on the northwest corner of Vallejo and Battery streets. The building will be of concrete and steel. A. Petri is president of the company.

SACRAMENTO, CAL.—The State Highway Commission has allotted the sum of $150,000 for the improvement of a road east from Willows to Glenn, in Glenn county. Of this sum, $50,000 will go towards constructing a bridge over Stony Creek on the Orland-Chico road.

SAN FRANCISCO, CAL.—The Los Angeles Soap Co. has purchased unimproved property on the northeast corner of Second and Brannan Sts., for $50,000, where a three-story factory will be erected. Plans have been drawn by W. H. Crim, Jr. Estimated cost is $150,000.

SAN FRANCISCO, CAL.—Plans are being prepared by W. H. Crim, Jr., architect, for a new Christian Science church to be erected on the southeast corner of Divisadero and Clay Streets. The building will be of Class "C" construction, of concrete and plaster, with terra cotta columns.

LODI, CAL.—The Western States Gas and Electric Company is planning to connect Lodi with the Pacific Gas and Electric Company lines and the auxiliary steam plant at Stockton for emergency use. The list will cost approximately $75,000. S. Kahn is vice-president of the Western States Gas and Electric Company.

TRACY, CAL.—The General Milk Co. of California is planning to erect a modern milk condensery here which will include a reinforced concrete milk evaporating plant building, also boiler and engine room building and a separate warehouse unit. Officials of the company are J. Hughs, Oakland, F. Glass, Berekeley, and G. Davis, Berkeley.

SAN FRANCISCO, CAL.—Dyer Bros. have been awarded a contract for the steel work in connection with the construction of a 2-story steel and brick factory building for the Pacific Embroidery Co., to be erected on the northwest corner of Mission and 13th streets at a cost of approximately $50,000. A. Burgren, 110 Sutter St., is the architect.

STOCKTON, CAL.—Action was recently taken by the local post of the American Legion to force an early choice by the city council of a site for the Memorial Auditorium to be constructed here. Bonds totaling $1,200,000 were voted in October, 1920, for the erection of a city hall and auditorium, the latter to be a memorial to the men who served during the war.

SEBASTOPOL, CAL.—Plans for enlarging three packing plants and constructing a new one at Garbro station, were approved by the stockholders of the Sebastopol Apple Growers' Union. Additions will be built to the branch packing houses at Forestville, Healdsburg and Stony Point. Directors of the Growers' Union are E. Merritt, H. Harbino, D. Sinclair and J. King.

OAKLAND, CAL.—A grain elevator that will handle 1,000,000 bushels of grain is planned for the city of Oakland, according to an announcement made by W. H. Heileman, secretary of the California Farm Bureau Elevator Corporation, which will build the new elevator. The company also plans to build from six to ten elevators in the San Joaquin, Sacramento and Salinas valleys.

TULARE, CAL.—Service betterment plans for the Southern California Edison Co. in Tulare county include a number of building programs of which the new pole treating plant and substation in Visalia are a part. The company also plans to build a new substation at Woodville and a substation cottage in Lindsay, also in Porterville. It is reported that $75,000 will be spent on the Porterville substation this year.

SAN FRANCISCO, CAL.—Work will be started in a few weeks on a seven-story apartment building on the northwest corner of Geary and Leavenworth Streets. The building will be of steel and brick frame construction, exterior finish in classic renaissance style, with terra cotta trimmings, interior finish of hardwood. Two and three-room apartments are planned, a total of 161 rooms in all. Estimated cost, $300,000. A. F. Rousseau is the owner.

### THE PACIFIC NORTHWEST

TACOMA, WASH.—E. N. Kisenower, Carl Gibbers and E. L. Eide have organized the Ajax Electrical Company, National Realty Building.

CHEHALIS, WASH.—The Triumph Shingle Company will rebuild its plant recently destroyed by fire. Plant will have output of 25,000 shingles daily.

SEATTLE, WASH. — The Granby Mining, Smelting & Power Co. is planning the early construction of a huge storage dam at Anyox, B. C., to cost $350,000.

ELLENSBURG, WASH.—The Union Bridge Co. of Seattle has been awarded a contract to construct a steel bridge across the Yakima river, two miles west of Ellensburg.

CENTRALIA, WASH.—A sawmill with a daily capacity of 25,000 ft. is being erected on the north fork of the Newaukum river by the Wilson Lumber Co., newly incorporated.

SEATTLE, WASH. — The Rainier Electric Bake Oven & Equipment Co. recently filed articles of incorporation, naming Jacob Hied, Peter Hied, Knut Halseth, et al., as incorporators.

YAKIMA, WASH.—The Yakima city commissioners have awarded a contract for the construction of the city irrigation system, which will serve the east side of town, to R. M. Hardy, of Yakima, whose bid was $193,000.

CHEHALIS, WASH. — The Wilson Lumber Company, Chehalis, incorporated by C. M. Merritt, S. B. Wilson and B. M. Wilson, plans the establishment of a lumber manufacturing plant near Chehalis. Plant will have capacity of 25,000 ft. daily.

TACOMA, WASH.—A petition asking for the formation of an improvement district and the improvement of Commerce Street from South 7th to South 17th Sts. by the installation of an ornamental street lighting system, has been filed with the city council.

KLAMATH FALLS, ORE.—Word has been received here that a government appropriation of $700,000 has been made at Washington for the Klamath irrigation project. When available, a large portion of the money will go for the development of Tule Lake lands.

KLAMATH FALLS, ORE.—Immediate construction of 115 miles of high tension transmission line from the Prospect power plant on the Rogue river to Eugene, Ore., to supply electric current to the Mountain States Power Co., has been announced by California Oregon Power Co.

SEATTLE, WASH.—Plans for the erection of a three-story addition to the present plant of the Rattan Furniture Manufacturing Company, 2648—15th Ave. West Seattle, are being prepared by Architect Stephens, Stephens & Brust, New York Block, Seattle. The building will be used for additional manufacturing purposes.

TACOMA, WASH.—The contract for drilling test holes on the Lake Cushman dam site for the city of Tacoma has been awarded to Lynch Bros. of Seattle, on their bid of $5.85 a foot, bringing the total for 2500 ft. to $14,625. The drilling will ascertain the unquestioned soundness of the Rock walls and bottom of the canyon of the Skokomish river.

TACOMA, WASH. — The Northern Pacific Railway Company has contracted with the Griffin Wheel Company of Tacoma for 2,500 car wheels each month during the present year, this contract representing an expenditure of $37,500 a month. The Griffin Wheel Company maintains the only plant of its kind west of St. Paul.

PUYALLUP, WASH.—A municipally owned light and power plant in Puyallup, according to authorities, will be a reality in the next year. Several power sites are being considered by the council, with McMillan Falls, six miles southeast of the city, leading in favor. W. T. Dumbolton, consulting engineer of Tacoma, estimates the cost of the proposed plant at $50,000.

EVERETT, WASH.—Supt. A. M. Chitty, of the power department of the Puget Sound

International Light & Power Co., reports that surveys have been completed, and materials are now being assembled for line extensions east and north of Everett, to cost between $80,000 and $90,000. The plan is to furnish electric service to smaller communities and ranchers in the district adjacent to Everett.

TACOMA, WASH.—Unofficially, it is reported between $300,000 and $500,000 of the $12,000,000 to be expended by the Northern Pacific Railway Company during 1922 in additions and betterments, and for new equipment for its lines, will be spent in Tacoma, in the South Tacoma shops. It is also understood that one-third of the freight cars to be built by the company to serve this district, will be built in Tacoma.

## THE PACIFIC SOUTHWEST

COVINA, CAL.—Work has started on the new building for the Home Telephone Co. on College Street.

LONG BEACH, CAL.—The Protex Oil Co. will erect an oil factory at Long Beach if a suitable site can be found.

CLOVIS, N. M.—Improvements totaling $100,000 will be made by the Railways Ice Co. on its plant south of the Santa Fe tracks.

REDONDO, CAL.—H. R. Retichier is planning the erection of an ice and refrigeration plant at Anita Street and Camino Real, to cost $70,000.

LANCASTER, CAL.—The fruit growers of the south end of Antelope Valley are considering the erection of a pre-cooling plant here to cost $215,000.

RIVERSIDE, CAL.—The Southern Sierras Power Co. is planning the erection of a power plant in Upper Mill Creek Canyon, just above Forest Home.

ARTESIA, CAL.—The Union Oil Co. will erect a machine shop upon 10 acres of land recently purchased near where it is now drilling at Santa Fe Springs.

LOS ANGELES, CAL.—Frank E. Garbutt has announced that plans are completed for the erection of a large film laboratory for the Famous Players-Lasky Corporation.

SAN PEDRO, CAL.—The contract for the 400-ft. steel transit shed has been awarded to the Llewellyn Iron Works for a sum approximating $45,000, and the work is to commence at once.

LONG BEACH, CAL.—J. H. Meldrim, president of the City Transfer Company, is authority for the statement that the company will erect at once a 6-story reinforced concrete storage building.

LONG BEACH, CAL.—Hancock Bros. have arranged to increase their plant by the addition of a $20,000 enameling and electroplating shop adjoining the present location at 620 E. Anaheim Road.

FULLERTON, CAL.—The city trustees are contemplating the use of $130,000 of the city funds now available for the erection of the much needed city hall. Announcement is expected in a few days.

GLENDALE, CAL.—Henry Jensen, of 1728 Westmoreland Boulevard, Los Angeles, has received a permit to erect a $40,000, 2-story store and apartment building at 133 West Brand Boulevard for himself.

PASADENA, CAL.—The city directors have adopted the plans of the city engineer for the ornamental lighting and other improvements to be made on Grand Avenue from Colorado to California Streets. Concrete posts are specified.

LONG BEACH, CAL.—Work will be started at once on the plant of the Kimball Motor Co. at Willowville. The buildings will be one-story, of brick and steel, and will cover an area of 24,000 sq. ft. Company engineers will superintend the construction. The cost is estimated at $300,000.

BAKERSFIELD, CAL.—The city council will call a special election to submit to the vote of the people the proposed project to issue $1,500,000 in bonds to purchase, combine, and extend the present water systems now supplying this city.

LOS ANGELES, CAL.—James Sams and Williard Conklin will erect a three-story building to be known as the Casino Theater at Ocean Front, between Marino and Navy Streets, costing $250,000. Russell & Alspaugh are the architects.

LOS ANGELES, CAL.—Carleton F. Burke will build a 7-story building for lease to the Southern California Music Company at 9th and Broadway. Milwaukee Building Company is preparing the plans for the reinforced concrete structure.

LOS ANGELES, CAL.—A factory will be built on San Fernando Road by the Concrete Lumber Co. for the manufacture of concrete lumber slabs to be used in building. Henry W. Schlueter, Los Angeles contracting engineer, is the inventor.

LOS ANGELES, CAL.—Architect Leonard Schultze of New York has opened offices in the Pacific Mutual building from which he proposes to direct the work in connection with the $7,000,000 Biltmore Hotel to be erected at Fifth and Olive Streets.

LOS ANGELES, CAL.—John M. Cooper, architect, has completed plans for the erection of a two-story reinforced concrete factory building on Pico Street, between Stanford and Paloma Streets, for the Angelus Furniture Co., estimated cost $50,000.

LONG BEACH, CAL.—A corporation to be known as the Long Beach Crystal Ice Co. has recently been formed with a capital stock of $100,000. A new ice plant will be erected at 2870 American Ave., Willowville, building and equipment to cost $55,000.

EAST SAN DIEGO, CAL.—City engineer E. Paul has been instructed to prepare the plans for a complete system of water mains and fire hydrants to provide ample service and protection for the city. It is estimated that 70 miles of mains will be required.

CALEXICO, CAL.—Los Angeles capital will erect a steam-driven ice plant of 30 tons capacity in Imperial Valley, according to plans now being prepared by architect Clifford Truesdell and consulting engineers J. W. Purington and H. C. Newton, all of Los Angeles.

PASADENA, CAL.—W. A. Taylor has been awarded a contract for the construction of a stadium here to cost approximately $300,000. The stadium will be constructed of wood and concrete in the form of a bowl, resembling the new Stanford University stadium.

SANTA BARBARA, CAL.—A modern ice and ice cream manufacturing plant is to be erected on a piece of the Southern Pacific property, according to the announced plans of T. P. Dalzell and H. B. Phillips. $125,000 will be the approximate cost when completed.

CORONA, CAL.—With a vote of 10 to 1 in favor of a $150,000 bond issue, this city has shown its approval of the project to purchase a site and erect a modern high school building. Work will begin as soon as the details incident to the sale of the bonds have been disposed of.

LOS ANGELES, CAL.—The design submitted by W. Horace Austin for the Farmers and Merchants Bank was accepted and he was commissioned to direct the plans and construction which will start about June 1st. The building will be 6-story and is estimated to cost $800,000.

INGLEWOOD, CAL.—W. W. Caldwell, sales manager, and P. C. McBride, of the Everready Heater Co., have announced that a factory will be built on five acres of land near the site of Hicks Dovetail Lath Co. The company is incorporated at $500,000. John B. Reeves is president.

LOS ANGELES, CAL.—The Ahlswede Mfg. Co. has let a contract for construction of a new plant for the manufacture of suit cases and bags to Ralph E. Homann Co., contractors. The building will be of brick and steel construction and will be located at San Pedro and 22nd Streets.

SAN DIEGO, CAL.—Clifford A. Truesdell, architect of Los Angeles, is preparing plans for a condensed milk plant to be erected in this city. The capacity will be for 50,000 lb. of milk per day. Refrigeration equipment, storage rooms, elevators, etc., are mentioned as included in the plans.

HOLLYWOOD, CAL.—Milwaukee Building Company is preparing plans for the Hollywood Athletic Club's new home at Sunset and Hudson. The building will cover the entire property, 200 ft. by 157 ft., and will conform to Italian Villa type architecture. The cost is estimated at $100,000 exclusive of furnishings.

## THE INTERMOUNTAIN DISTRICT

RAYMER, COLO.—Clare L. Brockett has organized The Raymer Light and Power Co. to supply electricity to this community.

CRAIG, COLO.—The Craig Light and Power Co. has been incorporated by W. W. Grant, Jr., J. S. Macbeth and J. P. Steele, for $25,000.

GRAND JUNCTION, COLO.—A new $100,000 moving picture theater will be built here shortly by a company of which Walter Walker is the head.

COLORADO SPRINGS, COLO.—The Automatic Electric Control Co. has been incorporated and headquarters have been opened by Harris and Price in the Burns Building.

DENVER, COLO.—Two new viaducts costing over a half million dollars each will be built shortly by the city and certain railroads. Special lighting systems will be installed.

SALT LAKE CITY, UTAH.—It is announced that work will begin in the early spring upon the construction of the new joint depot of the Bamberger Electric Railroad and Orem electric line. Approximately $200,000 is to be spent in this construction.

SALT LAKE CITY, UTAH.—Salt Lake county has obtained federal aid for the building of the proposed highway between Magna and the Tooele boundary, and work on the road will be started about April 1. The road will cost approximately $211,000, of which Salt Lake county will pay approximately $54,000.

OGDEN, UTAH.—A proposed system of highway lighting on the paved highway between Ogden and Salt Lake is being considered. This would cover a distance of approximately thirty-six miles. While no definite steps have been taken in regard to the matter, further developments are expected in the near future.

PAROWAN, UTAH.—Parowan City, by its city clerk, has applied to the Utah state engineer for authority to divert 21.03 cubic feet of water from Center creek, in Iron county, for the purpose of developing 340 hp. of electric energy for the furnishing of light and power to the citizens of Parowan. The diverting works will consist of a pipe line of wood and iron, which will carry the water so diverted 6000 ft.

SALT LAKE CITY, UTAH.—The Telluride Power Company has filed application with the Utah state engineer for the use of 100 sec.-ft. of water from the Sevier river, a short distance below the town of Sevier, in Sevier county, to be used in the development of 900 hp. of electric energy, which will be connected up with the company's distribution system in Beaver, Millard, Piute, Sevier and Sanpete counties and elsewhere. The proposed plant is at the intake of the Sevier valley canal.

## Advice to Authors—Brevity and Detail

All contributors to this magazine who desire to see their offerings appear in the same form in which they hand them in, should observe the first two rules of all pulications—be brief and be exact. As examples of what may be done in this regard, we offer the following two instances of success along these lines. In the matter of brevity, nothing can be more laudable than the efforts of the budding young author, who after much good advice from the editor, achieved the following sentence as the concluding chapter of his story:

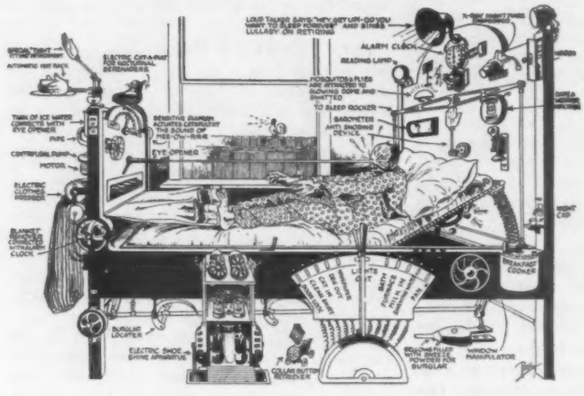
The villain thereupon took a scotch whiskey, his hat, his departure, no notice of his pursuers, a revolver out of his hip pocket, and, finally, his life.

In pointing out what can be done to remedy faults of inexactness we offer the instance of the country correspondent who was a persistent offender in leaving names out of his stories. That the editor's admonitions were not without effect is evidenced by the receipt of this dispatch:

"Yesterday afternoon a severe storm struck this place. Lightning struck a barbed-wire fence on the place of Hosea Gilkins, killing three cows, their names being Mary, Lulu and Harriett."

* * *

## The Electrical Home Complete



In re the discussion on the completely electrified home, "Science and Invention" has the above to suggest to the enterprising home builder.

* * *

## Apropos of Burglar Alarms

According to a London contemporary, an "Italian gentleman" has invented an elaborate burglar alarm system. It consists in coating the inner side of walls and windows with insulated tinfoil and metallic paint. An "ever-so-gentle electrical current" circulates through the tinfoil, and when the tinfoil is punctured the current is interrupted. "When the circuit is broken in any way a heavy plunger cushioned on oil begins falling slowly down in a cylinder in the cellar, making contact with wires, which explode three harmless bombs at intervals of 15 seconds, and then set a bell ringing hard."

This is ingenious, but it would probably be cheaper and better to let the burglar carry on.

* * *

"The bane of home-owing is the mortgage"—according to the happy misprint in the Home-Owning bulletin issued by a local bank to assist their patrons in financing their building operations.

* * *

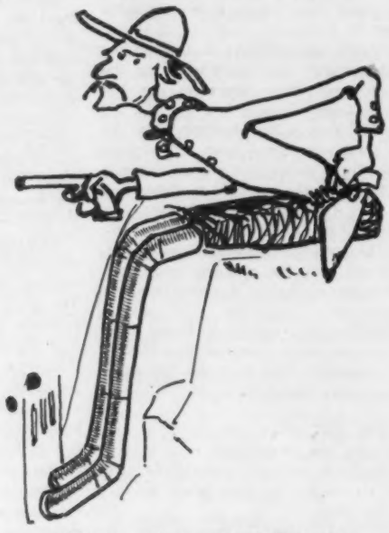
## This Is Also Our Specialty

"Son," said the father, "this is the age of specialists. "Is there anything you can do better than anyone else?"

"Yes, sir," replied the boy. "I can read my own writing."

* * *

## ELECTRICAL HYBRIDS



### XXII — The Penstock Ranger

The penstock ranger is a joke
Though forceful as a Turk.
He has a pipe, but not for smoke—
His discharge helps his work.

He drives a wheel and not a horse
Though many horses strong.
His use of water gives him force,
His head is very strong.

He makes the runner very fleet;
His dams will never fail—
Although they say his head has feet,
He races with his tail.